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The Relationship Between Behaviour and Language in Students at Risk for a Disruptive Behaviour Disorder

by

Diane Hinves

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled THE RELATIONSHIP BETWEEN BEHAVIOUR AND LANGUAGE IN STUDENTS AT RISK FOR A DISRUPTIVE BEHAVIOUR DISORDER submitted by DIANE LYNNE HINVES in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Special Education.

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Abstract

The primary purpose of the current research study was to determine whether kindergarten and Grade 1 children systematically identified as being at risk for a disruptive behaviour disorder (DBD) had co-existing language delays. Thirty-eight children and their respective families were recruited from a total of 14 high-needs schools within an Alberta urban public school system. A screening procedure, consisting of teacher judgement followed by the use of a systematic screening instrument, was used to form two groups of 19 children: one group identified as high risk for the development of DBD (HRG) and one group identified as low risk for DBD (LRG). A nonexperimental causal-comparative design (Borg, 1989) was used to compare the differences between the LRG and the HRG on measures of behavior and language functioning. Measures of demographics, family functioning, and social skills were also compared to determine whether the differences evident in children identified with a DBD, as reported in the literature, were found in children at risk for DBD. The secondary purpose of this research was to explore whether the well-established risk factors, including family demographics, family functioning, and social skills, were also associated with language delays. Correlational analyses were used to explore the possible relationships. Finally, a regression analysis was used to determine possible predictive relationships between expressive and/or receptive language skills and social skills.

The primary results show that a significant proportion of children attending kindergarten and Grade 1 identified as being at risk for DBD presented with co-occurring language delays. The preliminary analyses confirmed that low family income, low maternal education, negative parenting practices, and weak social skills associated with children with a diagnosed DBD, as reported in the literature, are also associated with children at risk for DBD. The secondary analyses reported a relationship between expressive language skills and maternal and paternal education and social skills. As well, expressive language skills were found to be a significant predictor of social skills. Results

are discussed in terms of the implications for educational service delivery for children at risk for DBD, and future research.

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CHAPTER I

INTRODUCTION

A disruptive behavior disorder (DBD) is the most frequently reported childhood disorder, occurring in 5% to 10% of the school-age population and, more frequently, among children from impoverished economic backgrounds (Kamps & Tankersley, 1996). In Canada, the National Longitudinal Survey for Children and Youth (NLSCY; McCain & Mustard, 1999) reported that by age 11 years, 19% of children showed significant behavioral difficulties. This figure was almost doubled (35%) in families from the lowest income group.

The vast body of risk-factor research on disruptive behavior disorders has identified a multitude of child-, parent-, and family-related risk factors that contribute to the early onset and maintenance of DBD in children (Christenson. Hirsch, & Hurley, 1997; Coie, 1996; Frick, 1998). Child-related factors include neurological deficits, difficult temperament, low verbal intelligence, poorly developed social skills, deficits in social cognition, co-occurring attention deficit disorders, and academic underachievement. Family dysfunction is considered one of the strongest risk factors associated with DBD and is often mediated in young and school-age children by ineffective parenting practices such as poor monitoring/supervision and the use of harsh and inconsistent discipline practices (Frick, 1998). The family-related stressors associated with poverty, including marked economic restraints, limited access to community resources and support, social isolation, and high-crime neighborhoods, can have a significant impact on child-parent interactions from birth and compromise parenting styles and practices (Frick, 1998; Hoff-Ginsberg & Tardiff, 1995; Kaiser & Hester, 1997; McCain & Mustard, 1999).

An increasing number of studies in the infant and preschool years (Campbell, 1997; Shaw & Winslow, 1997; Webster-Stratton, 1996) in developmental

psychopathology resulted in conceptualizing the development of DBD from a transactional perspective, emphasizing "concurrent and longitudinal effects of parents on children and children on parents" (Shaw & Winslow, 1997, p. 148). The etiology of this transaction may begin as early as infancy (McCain & Mustard, 1999; Moffitt, 1993). Neurological deficits (McCain & Mustard, 1999; Moffitt, 1993), insecure infant-parent attachment (Steinhauer, 1997), an authoritarian style of parenting, lack of parental involvement, and inconsistent and harsh discipline (Coie, 1996; Frick, 1998; McCain & Mustard, 1999; Moffitt, 1993; Patterson, DeBaryshe, & Ramsey, 1989; Shaw & Winslow, 1997; Steinhauer, 1997) can result in hyperactivity, inattention, aggression, emotional problems, and language and cognitive deficits during the toddler years. These child-related characteristics transact over time, with family adversity affecting the child's social, emotional, cognitive, and language growth; disrupting interpersonal relationships; and limiting academic achievements at school (Dishion & Patterson, 1997; Moffitt, 1993; Shaw & Winslow, 1997).

Given this early etiology, by the time the child enters kindergarten, a trajectory of child and parent risk factors may be well established, placing the child at high risk for the development of a disruptive behavior disorder, peer rejection, and limited academic achievement at school. A disruptive behavior disorder early in a child's school career is the single best predictor of delinquency in adolescence (Walker, Colvin & Ramsey, 1995) and leads to long-term adult offending and psychopathology (Moffitt, 1993). Steinhauer (1996) in a review of research, reported that 71% of children with a severe conduct disorder in Grade 1 were identified with antisocial behavior as adults. It is increasingly accepted that children at 8 years of age with a conduct disorder should be treated as having a chronic disorder because less severe disruptive behavior leads to more severe behavior without active intervention (Kamps & Tankersley, 1996; Walker et al., 1995). As a result, DBD is one of the most costly mental health problems that "traverses special education, mental health, juvenile justice, and social services" (Kazdin, 1996, p. 378).

Given the evidence for the early onset of a DBD, its continuity and stability over time, and its subsequent costs, systematic screening of children at risk and prevention efforts should occur as early as possible in the child's school career. Kindergarten is considered an optimal time for schools to screen children systematically to identify those who may be at risk for a DBD (Coie, 1996; Walker et al., 1995). This can result in further assessment of child and family risk and protective factors that lead to the development of effective early intervention in the school setting and the initiation of positive relationships between educators and parents.

The risk-factor research has suggested that educational intervention should be multisystemic in nature and individualized to the unique needs of the family and child, and should combine treatment components such as social-skills training, academic tutoring, and parent training (Christenson et al., 1997; Tremblay, Mâsse, Pagani, & Vitaro, 1996). Schools should work with families to develop positive partnerships and should work collaboratively with agencies to link families with support services and resources (Walker et al., 1995).

Statement of the Problem

Clearly, language deficits resulting from neurological and social factors are identified as child-related risk factors associated with the risk of DBD during the developmental periods of infancy through to school entry. However, the literature on the prevention of DBD in the school setting has targeted primarily the behavioral, social, academic, and familial risk factors. The language functioning of the child at risk for DBD requires consideration in the school setting. If research and educational practices are to address the implications of service-delivery for the language deficits of children at risk for DBD, then evidence for this relationship in the school setting must be well established.

A growing body of research has established a strong relationship between language disorders and emotional/behavior disorders in two clinical populations: children with identified speech and language disorders and children referred for psychiatric services (see Cohen, 1996; Donahue, Cole, & Hartas, 1994; Prizant et al., 1990; and Stevenson, 1996, for a review). Important research conducted in the school setting with students identified with behavior disorders has strongly supported this relationship (Camarata, Hughs, & Ruhl, 1988; Keefe, Hoge, Shea, & Hoenig, 1992; Miniutti, 1991). Two common implications are emerging from this research. One is the need for routine and systematic screening of language development with children at risk for behavior problems. The second is the need for speech and language pathologists, parents, and teachers to work together to better understand the impact of language deficits on behavior and to program accordingly.

The reasons for the relationship between behavior disorders and language disorders are complex and not well understood. When viewed from a transactional perspective, research has suggested that underlying child- and family-related variables that contribute over time to the development of DBD also contribute to delays in language development (Beitchman, Brownlie, & Wilson, 1996; McCain & Mustard, 1999; Moffitt, 1993; Steinhauer, 1997; Stevenson, 1996). Recent research has isolated the relationship between language functioning and social skills and reported evidence that language delays lead to disruptive behavior through impaired social relationships (Beitchman et al., 1996; Kaiser & Hester, 1997; Vallance, Cummings, & Humphries, 1998). Additional research has suggested a strong relationship between pragmatic language skills and social skills (Gallagher, 1996; Vallance et al., 1998). As receptive and expressive language skills contribute to the development of pragmatic language skills (McTear & Conti-Ramsden, 1992), then it is possible that children with social-skill deficits may have underlying receptive and/or expressive language deficits. This

underlying relationship is critical in light of the strong relationship between social skills and DBD.

The primary purpose of this research was to determine whether children attending kindergarten and Grade 1 who were identified as high risk for the development of a disruptive behavior disorder had co-existing language delays. Thirty-eight children and their respective families were recruited from a total of 14 high-needs schools within an Alberta urban public school district. High needs, as defined by the school district, were determined, based on a high level of student mobility and lower levels of family income. A screening procedure, that consisted of teacher judgement followed by the use of a systematic screening instrument (Student Risk Screening Scale), was used to form two groups of 19 children: One group identified as high risk for the development of DBD (HRG), and one group identified as low risk for DBD (LRG). A nonexperimental causal-comparative design (Borg & Gall, 1989) was used to compare the differences between the LRG and the HRG on measures of behavior and language functioning. Measures of demographics, family functioning, and social skills were also compared to determine whether the differences evident in children identified as DBD, as reported in the literature, were found in children at risk for DBD.

A series of preliminary analyses were undertaken to (a) confirm the risk status through a comparison of the HRG and the LRG on a standardized parent and teacher rating of behavior, (b) compare differences between the HRG and the LRG on demographic measures, and (c) compare differences between the HRG and LRG on measures of family functioning and social skills. A series of primary analyses were undertaken to (a) compare differences between the HRG and the LRG on measures of receptive and expressive language and to determine the percentage and type of language delays in each group, (b) determine the differences between receptive and expressive language skills within and between the groups, and (c) determine possible relationships between language functioning and the type of behavior problem.

The secondary purpose of this research was to explore whether the well-established risk factors, including family demographics, family functioning, and social skills, were also associated with language delays. Correlational analyses were used to explore the possible relationships. Finally, a regression analysis was used to determine possible predictive relationships between expressive and/or receptive language skills and social skills.

In the next chapter a review of the current literature is divided into two parts. The first part focuses on DBD. Accordingly, the essential features of DBD are defined, and the prevalence, co-morbidity with ADHD, and research supporting it's stability are briefly reviewed. A transactional model of risk factors is then described, followed by a review of risk factors relevant to this study, including demographic factors, family functioning, and social skills. The first part concludes with a review of prevention efforts in the school setting. The second part focuses on language and it's relationship to DBD. It begins with a brief definition of language and language disorders followed by a comprehensive review of the literature on the relationship between behavior disorders and language delays. A brief section on the reasons for the relationship highlights the explanation that related variables may contribute to the onset of both disorders and concludes with a review of the research on the relationship between impaired language, social skills, and DBD.

CHAPTER II

LITERATURE REVIEW

Disruptive Behavior Disorders

This study defines *disruptive behavior disorders* (DBD) according to the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV;* American Psychiatric Association [APA], 1994), because it is consistent with the psychiatric classification most often used to identify behavior disorders in educational settings. According to the *DSM-IV*, DBD has two major subgroups: *oppositional defiant disorder* (ODD) and *conduct disorder* (CD). The literature review, however, draws on a wide body of research that used synonymous terms such as *antisocial behavior, juvenile delinquency, conduct problems, aggression,* and *externalizing behavior.*

Oppositional Defiant Disorder and Conduct Disorder: Essential Features

According to the *DSM-IV* (APA, 1994), *ODD* is defined as a persistent pattern of negativistic, hostile, and defiant behavior towards authority figures that occurs more frequently than is observed in typical individuals of comparable age and developmental level. The defining feature of *CD* is a repetitive and persistent pattern of behavior that violates the rights of others, as well as age-appropriate social norms. The symptoms of CD fall into four main groups, including aggression to people and animals, destruction of property, deceitfulness and theft, and serious violation of rules. Extensive research has established that ODD may be a developmental antecedent to CD, with clinical symptoms as early as the preschool years (Campbell, 1997; Lahey & Loeber, 1994; Moffitt, 1993; Webster-Stratton, 1996). Because all the symptoms of ODD are usually present in CD, ODD is not diagnosed if the criteria for CD are met. The prevalence of ODD ranges from 6% to 12% in school-age population (Frick, 1998). CD is reported as three to four times more common in boys than in girls and occurs in approximately 5% to 12% of the

school-age population (Frick, 1998; Kaiser & Hester., 1997) and, more frequently, among children from impoverished economic backgrounds (Kaiser & Hester., 1997; Steinhauer, 1997).

Conduct Disorder Subtypes

Developmental research on the period of onset of CD forms the basis for the two *DSM-IV* (APA, 1994) subtypes of CD: childhood onset (evidence of one criterion present prior to age 10 years) and adolescent onset (absence of diagnostic criteria characteristics prior to 10 years) (Clarizio, 1997; Kazdin, 1996). Extensive reviews have indicated that childhood-onset CD is strongly associated with a multitude of child- and parent-related and contextual risk factors (Christenson, et al., 1997; Coie, 1996; Frick, 1998). Children begin to show oppositional behaviors at a young age (3-7 years), and these behaviors progress into more severe conduct problems (Frick, 1998). Childhood onset has a more persistent and stable life course and results in higher risk for criminality and/or adult antisocial behavior (Dishion & Patterson, 1997; Frick, 1998; Moffitt, 1993).

In contrast, individuals diagnosed with adolescent-onset CD tend to engage in delinquent behavior in a struggle for autonomy and adult privileges. They are likely to have adequate social and cognitive skills, and most discontinue their antisocial behavior as they move into adult relationships and employment (Clarizio, 1997).

Co-morbidity with Attention Deficit Hyperactive Disorder (ADHD)

According to the *DSM-IV* (APA, 1994), the essential feature of ADHD is a persistent pattern of inattention and/or hyperactivity/impulsivity that occurs more frequently than is observed in individuals of comparable age and developmental level. Impairment from the symptoms must be evident in two separate settings (e.g., home and school), with an onset prior to 7 years of age. The majority of children treated for CD have a co-morbid diagnosis of ADHD with reported rates ranging from 65% to 90% (Frick, 1998). However, it is important to note that the reverse pattern is not true. The presence of ADHD in children with CD leads to more severe antisocial behavior with an

earlier onset and greater risk for poor adjustment in adolescence and adulthood (Frick, 1998; Moffitt, 1993). The high co-occurrence appears to be associated with risk factors such as neuropsychological deficits (Henry & Moffitt, 1997) and ineffective parenting practices (Frick, 1998).

Stability of DBD

A DBD early in a child's school career is the single best predictor of delinquency in adolescence (Walker et al., 1995) and leads to long-term adult offending and pyschopathology (Moffitt, 1993). Steinhauer (1996) cited research that indicated that 71% of children with severe conduct disorder in Grade 1 became antisocial adults, 70% to 90% of adult offenders had been aggressive when young, and 75% to 80% of adults in prison were repeat offenders as children. Research has suggested that stability coefficients for aggressive behavior in childhood rival the figures derived for the stability of IQ. The stability for IQ over 10 years is .70 and for aggressive behavior is .80 (Patterson, DeBaryshe, & Ramsey, 2000; Walker et al., 1995). Walker et al. reported evidence that no intervention to date has "permanently" altered DBD and successfully diverted children and youth from the subsequent chain of risk factors. The authors stated that

> if an antisocial behavior is not changed by the end of grade 3, it should be treated as a chronic condition, much like diabetes. That is, it cannot be cured but can be managed with appropriate supports and continuing interventions. (p. 6)

The next section presents a conceptual model of the development of DBD, followed by a review of the risk factors relevant to this study.

The Development of DBD: A Transactional Perspective

This study views the development of a DBD within a transactional model of risk factors (Sameroff & Fiese, 1990). A transactional model is one that explains behavioral outcomes as the mutual effects of context on child and child on context (Sameroff & Fiese, 1990). Thus, the constellation of symptoms, classified as childhood DBD (ODD,

CD) and co-morbid ADHD, are a function of neither the initial state of the child nor the initial state of the environment, but a product of a complexity of child-, family- and contextual-related risk factors that transact over time. Sameroff and Fiese highlighted two important implications of this model with respect to prevention. One is that the different combinations of risk factors for different children can result in the same behavioral outcomes. This suggests the need for researchers and educators to carefully consider the combination of potential factors for each child and his/her respective family. The second is that the behavioral outcomes are rarely the result of just the proximal risk factors or just the distal risk factors. Thus, careful consideration of the chain of risk factors is required when planning prevention programs.

The literature has provided strong empirical evidence that the etiology of risk factors associated with the development of DBD begins as early as infancy (McCain & Mustard, 1999; Moffitt, 1993; Steinhauer, 1997). Infant characteristics such as difficult temperament and/or neurological deficits transact with negative family interactions (i.e., neglect, abuse, stress), resulting in the development of hyperactivity, inattention, aggression, poor emotional regulation, and language and cognitive deficits during the toddler years. These child characteristics continue to transact over time, with negative parent-child relations affecting the child's social, emotional, cognitive, and language growth; disrupting social relationships; and limiting academic achievements at school. The following review addresses only those well-established child-, family-, and contextual-related risk factors that are relevant to this study. Because the primary purpose of this study is to address the relationship between DBD and language functioning, this review will highlight and incorporate evidence that language deficits, although not always recognized as a risk factor, are in fact embedded within the chain of transactions.

Child-Related Risk Factors

Neurological deficits. In infancy the proximal risk factors are neurological deficits (McCain & Mustard, 1999; Moffitt, 1993). Moffitt reviewed extensive research, which reported that neurological deficits present at birth due to heritability, poor prenatal care, and/or birth complications are strongly linked with lifelong persistent antisocial behavior. Recent research on brain development as reviewed by McCain and Mustard reported that the social and family experiences during a child's early years from conception to 6 years of age have the most important influence on brain development and subsequent learning, behavior, and health. This research provided evidence that negative parent-child interactions characterized by neglect and/or abuse can compromise the brain development of a young child during the critical periods of development. The critical periods of development in the limbic area, responsible for emotional regulation and attachment, and the mid-brain area, which mediates arousal, range from approximately 8 months to 2 years. Following 2 years, the degree of plasticity wanes until 6 years of age, and subsequent modification is unlikely. As a result, the child who has experienced a lack of stimulation or negative and abusive interactions during the early years will have lifelong difficulties with emotional regulation and abnormal responses to stimulation and/or stress. With respect to language development, it is worth noting that the critical period for the development of the cortex, the area responsible for language and cognition, appears to be in "synergy" with the core functions of the limbic and midbrain systems. Therefore the negative stimulation that may lead to compromised emotional regulation may also lead to compromised language.

Moffitt (1993) reviewed research that strongly supported the link between antisocial outcomes and two types of neuropsychological deficits: verbal and executive function deficits. The verbal deficits were pervasive and compromised receptive and expressive language abilities, literacy skills, and problem-solving abilities. The executive-function deficits included ability to sustain attention and concentration, abstract

reasoning, planning, impulsivity, and self-monitoring skills. In a review of the relationship between neuropsychological deficits and antisocial outcomes, Henry and Moffitt (1997) reported that almost all studies provided evidence of deficits on language-based measures in the antisocial group. As well, a stronger relationship was evident between deficits on language-based measures and antisocial outcomes than between deficits on nonlanguage-based measures.

The research on the relationship between neurological deficits and the development of DBD has clearly supported that language deficits are a proximal risk factor in the early years. Next, the review addresses the relationship between DBD and social-skill deficits.

Social-skill deficits. *Social skills*, as defined by Gresham and Elliot (1990), are "socially acceptable learned behaviors that enable a person to interact effectively with others and to avoid socially unacceptable responses" (p. 1). Specific examples include sharing, helping, resolving conflicts, cooperating, initiating relationships, requesting help, and giving compliments. An extensive body of research has demonstrated that children at risk for DBD consistently fail in their social relations with other children and adults in the school setting (Bierman, Greenberg, & Conduct Problems Prevention Research Group, 1996; Frick, 1998; Steinhauer, 1997; Tremblay et al., 1996; Walker et al., 1995).

Aggression is one of the primary causes of poor social relations with peers and teachers (Tremblay et al., 1996; Walker et al., 1995). Other child characteristics strongly linked with social-skill deficits include negatively biased evaluations of neutral social situations, social cognitive deficits, difficulties with emotional regulation, impulsivity, and disagreeable behaviors (Bierman et al., 1996; Dodge & Schwartz, 1997; Walker et al., 1995). Emerging research has proposed that language impairments are strongly related to social cognitive processing deficits in children with behavior problems (Cohen, Menna, et al., 1998).

Negative parent- and family-related experiences that contribute to aggressive behavior and the child's lack of emotional regulation also contribute to the social-skill deficits. An insecure parent-child attachment characterized by unpredictability and nonresponsiveness can lead to child-affective reactions such as anxiety, anger, or ambivalence (Bierman et al., 1996). These responses, socially manifested over time as "withdrawal and avoidance or alternately, intrusive and demanding behaviors" (p. 67), can generalize to other interpersonal relationships and result in violent behavior and social and emotional deficits. Ongoing negative family relationships characterized by coercive interactions are generalized to other interpersonal experiences (Patterson et al., 1989).

The social-interaction demands in the school peer group present a challenge for children and require cooperative skills; attentive and agreeable behaviors; and the ability to follow rules, negotiate conflicts effectively, and communicate clearly to establish a "common ground" in play (Bierman et al., 1996). Children who have difficulty with emotional regulation and inhibition of aggression tend to be quickly rejected by their prosocial peers (Bierman et al., 1996; Tremblay et al., 1996; Walker et al., 1995). Language is a social phenomenon, so it is not surprising that children with language difficulties experience difficulties in their social interactions with others (Gallagher, 1996). Conversely, it is possible that many children who experience social-skill deficits may therefore have underlying language difficulties. Gallagher provided substantial evidence that children with language difficulties are often socially rejected by their peers. Furthermore emerging research provided evidence that social deficits mediate the link between language impairment and DBD (Beitchman et al., 1996; Vallance et al., 1998).

Peer relationships provide an opportunity for children to learn social skills in the school setting. Steinhauer (1997) stated that peers "provide a community in microcosm that can either support or undermine the child's mastery of problem solving, self-esteem, and control over emotions (including aggression)" (p. 66). Peers act as teachers and

models and provide emotional support to facilitate the development of social skills such as cooperation, sharing, and negotiating (Bierman et al., 1996). As a result of peer rejection, and in some cases a lack of classroom support, children at risk for DBD may have few opportunities for positive peer interactions and miss out on the social learning opportunity, leading to increased deficits in social skills (Bierman et al., 1996).

The link between language and social skills is also inherent in pragmatic language skills. Social skills, as defined by Gresham and Elliot (1990), overlap significantly with some aspects of pragmatic language development. *Pragmatic language*, broadly defined, is "the use of language in communication"; however, it involves a complexity of linguistic abilities and social, cognitive, and nonverbal communication skills (McTear & Conti-Ramsden, 1992, p. 174). As with social skills, pragmatic language encompasses skills related to communicative competence such as the ability to take turns and to initiate conversations, and the production and understanding of speech acts (i.e., requests, promises), requests for clarification, and story telling (McTear & Conti-Ramsden, 1992). Thus, children with pragmatic language difficulties can strongly resemble children with social-skill deficits, demonstrate difficulty coping with everyday social interactions at home and in school, and have difficulty making friends (Kaiser & Hester, 1997; McTear & Conti-Ramsden, 1992).

The correlation between pragmatic language and social skills is highlighted in this study for two reasons. One is that there is a strong relationship between pragmatic language deficits and DBD. This will be further addressed in part 2 of the literature review. Second, the literature has provided strong evidence that receptive and expressive language deficits can contribute to pragmatic language deficits (McTear & Conti-Ramsden, 1992). Thus, it is highly possible that children with social-skill deficits may have underlying receptive and/or expressive language difficulties. This relationship, as well, will be further explored in part 2 of the literature review.

Next is a review of the family-related risk factors associated with DBD.

Family-Related Risk Factors

Family dysfunction is one of the strongest risk factors related to the development of DBD (Frick, 1998). Substantial research has provided evidence that family stressors strongly related to DBD, such as unemployment, parent psychopathology, substance abuse, family violence, and marital discord, are mediated through parenting style and practices (Coie, 1996; Dishion & Patterson, 1997; McCain & Mustard, 1999; Moffitt, 1993; Patterson et al., 1989; Shaw & Winslow, 1997; Steinhauer, 1997).

The link between negative parenting style and practices associated with the development of DBD begins at birth. Negative parent-child interactions characterized by neglect and/or abuse during the first 2 years of the child's life can result in an insecure parent-child attachment (Bierman et al., 1996; Steinhauer, 1997). The combination of insecure attachment style and ongoing negative parenting practices and family adversity is strongly associated with the development of DBD (Moretti, Holland, & Peterson, 1994). With respect to language development, the recent literature reported a strong link between insecure infant-parent attachment and subsequent delays in language development (Bernstein & Tiegerman-Farber, 1997; Crittenden, 1996).

The National Longitudinal Survey for Children and Youth (McCain & Mustard, 1999) reported that an authoritarian style of parenting (highly controlling, lacking warmth, inconsistent responding) and a permissive-irrational style (inconsistent and harsh discipline, extreme tolerance for misbehavior) were strongly related to behavior difficulties in the preschool and school age years. Steinhauer (1997) reported that these styles of parenting compromise language development because they discourage reciprocity, thus preventing children from "speaking up for themselves and negotiating successfully with others, skills prerequisite to effective problem solving" (p. 63).

From a social learning perspective, research has demonstrated that the parenting practices of harsh and inconsistent discipline, lack of parental monitoring, supervision, and involvement with the child are most strongly related to the development of DBD

(Dishion & Patterson, 1997; Frick, 1998; Loeber & Stouthamer-Loeber, 1986; Shelton, Frick, & Wooten, 1996). Patterson et al. (1989) suggested that a coercive pattern of interaction between parent and child, in which the parent and child escalate the level of their aversive behavior toward each other in discipline contexts, leads to the development of harsh and inconsistent discipline practices. At times the child's whining and refusals to comply are rewarded by the cessation of parental demands, thus rewarding the child's noncompliance. At other times the parent engages in abusive behavior toward the child. As a result, the child is exposed to violent models of behavior and is reinforced for the use of aversive behavior. Dishion and Patterson reported that that ongoing coercive family exchanges undermine family management practices, such as parent monitoring. Eventually this leads to parent rejection and decreased involvement and reduces the likelihood that the parent will monitor the child's peer relationships.

Loeber and Stouthamer-Loeber (1986) conducted a meta-analysis of the research on parenting practices and DBD and found that the degree of parental involvement with their children (i.e., time spent together, parental involvement in school activities) and the quality of supervision that parents provide their children were consistently associated with DBD in school-aged children and adolescents.

More recent research on the relationship between parenting practices and DBD in school-aged children was conducted by Shelton et al. (1996) using the Alabama Parenting Questionnaire (APQ). The APQ is a rationally designed assessment system that measures the parenting constructs, identified in previous research, most related to DBD including: parental involvement, use of positive parenting strategies, monitoring and supervision, inconsistency in applying discipline, and the use of corporal punishment. The results indicated significant elevations on the negative parenting scales of poor monitoring, inconsistent discipline, and corporal punishment, but not on the two positive parenting scales of involvement and positive parenting. Frick, Christian, and Wootton (in press), in a follow-up study to address age trends, reported that lack of parental

involvement was most predictive in the adolescent age group (13-17 years), and corporal punishment was most strongly associated with conduct problems in the middle age group (9-12 years). Parental monitoring and supervision of children's behavior was moderately predictive in both the adolescent and middle age group and moderately predictive in the younger age group (6-9 years). Inconsistent discipline practices were highly predictive in the adolescent group and moderately predictive in the younger age group.

With respect to language development, the literature provided strong evidence for the links between harsh and authoritarian parenting practices and language delays in children (Hoff-Ginsberg & Tardiff, 1995; Kaiser & Hester, 1997; Steinhauer, 1997). Kaiser and Hester proposed that implicit in the authoritarian practices is limited modeling of social communication strategies, limited use of extended explanations, and weak modeling of complex verbal reasoning.

Contextual-Related Risk Factors

Demographic variables such as low family-income level, single-parent family structures, high-crime and low-income neighborhoods, and low parent education are associated with the development of DBD (Frick, 1998; Hoff-Ginsberg & Tardiff, 1995; Patterson et al., 2000; Steinhauer, 1997). In the results of the NLSCY, McCain and Mustard (1999) reported that the highest proportion of children experiencing behavioral difficulties in Canada came from families in the lowest socioeconomic group. Steinhauer (1997) reported that children growing up in "poverty" show almost three-and-a-half times more conduct disorders than do those who are not poor. With respect to language functioning, McCain and Mustard reported that the highest proportion of children experiencing language problems, as screened on a measure of receptive language skills, also came from families with the lowest incomes.

However, not all children who live in families at risk demographically are also at risk for DBD. Rather, the research suggested that parenting practices such as harsh and inconsistent discipline and lack of parental involvement in child activities mediated the

effects of the demographic risk factors on the development of DBD (Dishion & Patterson, 1997; Frick, 1998; McCain & Mustard, 1999). Frick reported evidence that parents living in impoverished conditions were socially isolated and experienced higher rates of negative interactions with social and community agencies. As a result of the insularity and marginalization, these parents had difficulty responding to their children in a contingent and consistent manner, and their responses to their children reflected recently experienced negativity and not necessarily the behavior of their children (Frick, 1998; Steinhauer, 1997). Neighborhoods high in density, crime, and drug abuse lack a social cohesion "marked by an absence of shared beliefs, values and behavioral norms" (p. 67), which can undermine the parents' ability to socialize their child effectively.

Researchers studying the relationship between parenting and SES reported that parents from low-income families tend be more controlling, restrictive, disapproving, and punitive when interacting with their children (Hoff-Ginsberg & Tardif, 1995; Patterson et al., 2000). Conversely, middle-class parents seem more likely to use reasoning and psychological methods of discipline, allow their children more freedom of direction and choice, and express positive affect toward their children (Patterson et al., 2000). As indicated earlier in the review, an authoritarian style of parenting can result in compromised language development (e.g., Steinhauer 1997).

In an extensive review of the literature on parenting and socioeconomic status, Hoff-Ginsberg and Tardif (1995) stated that a parent's "education seems to be the most important variable in accounting for SES-associated differences in parenting beliefs and behaviors" (p. 170). These authors reported that the education of the parents influences their psychological characteristics, such as verbal IQ, the level of complexity with which they might think about child development and parenting, the amount of language stimulation provided to the child, and the quality of parent and child interaction.

It is evident from this review that language delays are also linked with the demographic risk factors associated with DBD. However, as with DBD, the relationship is complex and is often mediated by other family- and parent-related factors.

In summary, from a transactional perspective, it is evident that many of the proximal and distal risk factors associated with the development of DBD in school-aged children, such as neurological deficits, social-skills deficits, negative parenting practices, and demographic factors, are also associated with the development of language deficits. However, as is evident in the section that follows, these deficits are not reflected in the research on current prevention efforts in the school setting.

Prevention of DBD

Screening of DBD. Given the strong empirical evidence for the early onset, trajectory, and stability of the child-, family-, and parent-related risk factors, it is critical that systematic screening of school-aged children at risk for DBD occur in kindergarten (Coie, 1996; Walker et al., 1995). Walker et al. emphasized that preschoolers who show early signs of DBD "do not outgrow them" and that the earlier the signs are detected, the "better the chance there is for early intervention to divert them from an antisocial path" (p. 48). Kindergarten is an optimal time to identify high-risk children for prevention and to establish positive partnerships with parents (Coie, 1996). It is an important transition in the lives of children and parents, and parents may be more responsive to prevention that supports school adjustment (Coie, 1996). Walker et al. emphasized the need for teachers to consider a proactive process to identify children at risk for DBD. They reviewed research that indicated that although teachers are quite knowledgeable about the behavioral characteristics of children at risk, when left on their own, these children are far more likely to be referred when the pattern of symptoms is well established. Walker et al. suggested the use of the Student Risk Screening Scale (SRSS), a seven-item scale developed and researched by Drummond (1993; as cited in Walker et al., 1995). The seven items were identified as behavioral precursors of antisocial behavior patterns and

included stealing; lying, cheating sneaking; behavior problems; peer rejection; low academic achievement; negative attitude; and aggressive behavior. As well, these authors suggested the simultaneous use of a standardized multi-informant (parent and teacher) and multi-setting (classroom, home, and playground) measure to ensure a broad and more accurate perspective of the child's at-risk behavior.

Prevention programs. Once students have been identified, prevention efforts should be multisystemic in nature, and individualized to the unique needs of the family and child, and should combine treatment components such as social-skills training, reading readiness, and parent training (Christenson et al., 1997; Coie, 1996; Tremblay et al., 1996; Walker et al., 1995). Given the robust association of negative parenting practices and DBD, the literature has suggested that schools should work with all families to build strong school-home partnerships and work collaboratively with other agencies to provide families with support and resources (Walker et al., 1995).

Promising prevention programs for young school-age children at risk have been reported in the literature. The Montreal Prevention Experiment, a longitudinal study, was designed to provide two years of parent training and child social-skills training to a group of Grade 1 boys living in families with lower SES (Tremblay et al., 1996). The results, based on class placement, teacher ratings, peer ratings, and self-reports, revealed that the boys in the treatment group at 12 years of age were rated as less disruptive and less likely to be classified as having serious difficulties than the untreated boys (24% vs. 44%).

The Fast Track Program is a long-term, multisite research project that is still in progress. It is designed to provide social-skills training and intense family-based intervention at two periods of transition: Grades 1 and 2, and Grades 5 and 6 (McMahon, Slough, & Conduct Problems Prevention Research Group, 1996). Children are first identified as being at high risk in kindergarten on the basis of both parent and teacher reports of high levels of conduct problems, and intervention begins in Grade 1.

Preliminary data showed success in recruitment and participation of families during the first grade (McMahon et al., 1996).

Steinhauer (1997) reviewed a project in progress, "Helping Children Adjust," designed to compare the effectiveness of a combined social-skills and academic-training program and a parent-management program for children between kindergarten and Grade 3 at risk for DBD. The preliminary results demonstrated some changes in children's behavior; however, parent-management training was dropped because of lack of interest.

Given the limited recognition of language delays in the risk factor research on DBD, it is not surprising that there is a dearth of research available on language interventions for school-aged children at risk for DBD. However, promising interventions are emerging in the preschool setting that may serve as future models for teachers of the elementary years (Gallagher, 1996; Hayden & Pukonen., 1996; Kaiser & Hester, 1997). Gallagher reported the results of a 10- week preschool communication intervention program in Toronto, Ontario, designed to examine the relationships among expressive and receptive language performance and changes in social behavioral skills. The results of the pilot study indicated that the expressive and receptive language performance of children presenting with severe language impairment improved following the communication intervention program. As well, these language improvements covaried with improvements in the children's social behavioral ratings on standardized rating scales and peer interaction profiles.

Part 2 of the literature review looks at a growing body of research that has established a strong relationship between behavior disorders and language disorders in two clinical populations: children referred for speech and language services and children referred for psychiatric services. As well, emerging research in the school setting is reviewed. The review begins with a definition of *language* and *language disorders.*

The Relationship Between Language Disorders and Behavior Disorders

Definition of Language and Language Disorders

Lahey (1988) defined *language* as "a code whereby ideas about the world are expressed through a conventional system of arbitrary signals for communication" (p. 2). According to Bloom and Lahey's (as cited in Bernstein & Tiegerman-Farber, 1997) conceptualization, language is divided into three major components: form, which includes phonology, morphology, and syntax; content, which involves meaning; and use, which encompasses rules that govern the use of language in social contexts. The integration of these components observed in the language of children is considered "knowledge of language," and "knowledge of language is language competence" (Lahey, 1988, p. 18). Conversely, language disorders encompass many different kinds of disruption in this integration of form, content, and use. Lahey suggested that the term *language disorders* not only describes

> children who are having difficulty learning the form of language (a disruption of form), but also describes children who can talk easily and readily but say nothing (a disruption of content), or who talk a lot but rarely direct their speech to others (a disruption in use), as well as children who use forms to communicate ideas but not in the conventional manner (a distortion among the interactions among content, form, use) or who utter forms with no apparent meaning and purpose (a separation of content, form, and use). (p. 34)

Typically, language disorders are referred to in the research as *receptive language disorders, expressive language disorders* and *pragmatic language disorders*. Receptive language disorders include problems in comprehending the meaning of words and grammatical and sentence structures (Tannock & Schachar, 1996). Expressive language disorders include difficulties in choosing and developing ideas, in selecting appropriate words to represent the ideas, and/or in ordering the words grammatically to convey a clear message (Tannock & Schachar, 1996). Pragmatic language disorders, as briefly

addressed earlier in the review, are broadly defined as difficulties using language within a social and communicative context (McTear & Conti-Ramsden, 1992).

Consistent with Bloom and Lahey's conceptualization of language, McTear and Conti-Ramsden (1992) provided empirical evidence that deficits in receptive and expressive language skills can contribute to pragmatic language disorders. For example, speech acts such as requests can be compromised by weak grammatical structures such as verb tense, resulting in impolite and demanding requests. Poor comprehension affects turn taking and the ability to maintain and/or initiate a topic in conversations. Word-retrieval problems can result in hesitations, circumlocution, and the use of incorrect words that compromise social interactions. Difficulties in spatial and temporal concepts can affect a child's ability to order events and to understand cause and effect. The authors noted that, although the pragmatic language deficits may also be the result of cognitive, social, and/or affective factors, it is important to examine carefully the child's expressive and receptive language skills.

The prevalence of language impairment in the general population varies with age, with reported estimates between 1% and 3% in 5-year-olds and common estimates of 3% in school-aged samples (Cohen, 1996). Cohen noted that children who have deficits in multiple language areas and whose language problems continue beyond age 5 years are at greatest disadvantage.

The prevalence of language impairment is reported as being higher in children from lower socioeconomic backgrounds (Donaldson, 1995). The National Longitudinal Survey of Children and Youth (McCain & Mustard, 1999) reported that the receptive vocabulary skills of children aged 4 and 5 years were significantly lower in children from families in a lower income group. Approximately 30% of the children in the lowest income group scored at least 1 standard deviation below the normative mean on a test of receptive vocabulary, compared to 5% in the highest income group.

Studies Supporting the Co-occurrence of Language Disorders and Behavior Disorders

A growing body of research has established that there is a relationship between language disorders and emotional/behavior disorders in two populations: children identified with speech and language disorders and children presenting with psychiatric disorders (see Cohen, 1996; Stevenson, 1996). As well, a body of research is emerging on children presenting behavior disorders and co-existing language delays in the school setting (Camarata et al., 1988; Griffith, Rogers-Adkinson, & Cusick, 1997; Miniutti, 1991). Two common implications for service delivery are emerging from these studies. One is the need for routine and systematic language screening of children at risk for behavior problems, and the second is for speech and language pathologists, parents, and teachers to work together to better understand the impact of language deficits on the child's behavior and social, emotional, and academic development.

Generally, most of the studies in both populations controlled for the level of intelligence and excluded any children with evidence of mental retardation, pervasive developmental disorders, and neurosensory motor problems. Although in many of the studies the measured verbal and nonverbal intelligence levels were lower in the group presenting with psychiatric disorders, generally, their mean intelligence level remained within the normal range (Cantwell & Baker, 1991; Cohen, Davine, Horodezky, Lipsett, & Isaacson, 1993). Some of the important studies on both populations will now be summarized.

Studies of children identified with speech and language disorders. In a large-scale epidemiological study involving 600 children referred for speech and language services, Cantwell and Baker (1991) found that 50% presented with a co-occurring speech/language disorder and psychiatric disorder. The most common psychiatric disorder was attention deficit disorder, which affected 19% of the sample. Other disruptive disorders (ODD, CD) were found in 7% of the sample. Multiple language

deficits (receptive, expressive, language processing) were present in 82% of the sample with co-occurring psychiatric disorders, expressive and language deficits were present in 81% of the sample, and only 42% of the sample had expressive deficits alone. In isolating various demographic and psychosocial factors, the study revealed that of the 26% with either a DBD or attention deficit disorder, the majority were males, and the families had significantly more psychosocial stress as determined through interviews. Three types of stressors were significant: family illness, family discord, and parental problems (e.g., legal difficulties, housing concerns). Interviewer rating indicated that warmth of family members toward the children with psychiatric disorders was significantly lower than the group of children without psychiatric disorders. A significant difference was evident between the groups on the demographic variable of family structure as 30% of the group with co-occurring of disorders came from single-parent homes. A significant difference was not evident between the groups on the demographic variables of maternal and paternal education and/or occupation.

Beitchman, Nair, Clegg, Ferguson, and Patel (1986) conducted an epidemiological study of 1,655 kindergarten students who were assessed for speech and language disorders. They identified 142 children with speech and language problems and a matching control group to determine whether there was a relationship between speech and language disorders and psychiatric disorders. The results of the study indicated that 48% of the group with a speech/language disorder had a co-occurring psychiatric disorder. Conversely, only 11% of the children in the control group presented with a psychiatric disorder. The most common psychiatric diagnosis was attention deficit disorder, found in 30% of the group presenting with a co-occurring speech and language disorder and 4% of the control group. Further analysis of linguistic functioning (Beitchman, Hood, Rochon, & Peterson, 1988) revealed that the group with overall lowest language functioning was significantly associated with an increased rate of psychiatric disorder. Psychosocial stressors as measured by the *DSM-III*–Axis IV, and the

demographic factors of socioeconomic status and the percentage of two-parent families were significantly lower in the group with the overall lowest language functioning and co-occurring psychiatric disorders . When these children were followed to age 12 years, the group with the overall lowest language functioning was found to show increased rates of emotional and externalizing disorders (Beitchman et al., 1996). The group of boys with poor auditory/language comprehension showed increased levels of hyperactivity and aggression at age 12 years. Within a subsample of 56 children, Beitchman et al. (1996) used a regression model to examine whether the time 1 variables of expressive language, cognition, mother's adversity (mental health, marital adjustment), and child's health measured at 5 years of age were possible predictor variables of time 2 psychiatric composite scores measured at 12 years of age. The results indicated that mother's adversity accounted for the largest share of explained variance (23%), and expressive language accounted for 15% of the variance.

Stevenson, Richman, and Graham (1985) reported in a longitudinal study of 535 preschool children that a delay in expressive language structure at age 3 years was predictive of behavioral difficulties at 8 years of age when behavior was controlled for at age 3 years. Of the 56 boys with language delays at age 3 years, 41% showed behavioral difficulties at 8 years of age. Of the 37 girls with language delays at age 3 years, 27% showed behavioral difficulties at 8 years of age. Similarly, Silva, Williams, and McGee (1987) reported in a longitudinal study of 1,037 children in New Zealand that a language comprehension delay and general language delay identified at 3 years of age was highly predictive of behavior problems at 7, 9, and 11 years of age. A significant difference in the behavior of the 27% of children at age 3 years with a generalized language delay was evident on the teacher scale of behavior at age 7 years, the teacher and parent scales at age 9 years, and the parent scale at age 11 years. Family disadvantage as measured by income level and psychosocial stressors (marital discord, maternal health) was

significantly higher in the group of 3-year-olds identified with generalized language delays.

In a longitudinal study of 122 boys, from birth to maturity, Stattin and Klackenberg-Larson (1993) reported significant correlations between language development measured at 6 months, 18 months, 24 months, 3 years, and 5 years and registered criminality in later years. Additional correlates of impaired language and criminality included lower verbal intelligence and SES. In examining the relationship between SES—including variables of occupation, level of education, income, and quality of family dwelling—and language development, the authors reported that the mother's education and occupation and the quality of the family dwelling were generally more strongly associated with lower language development at all ages. However, the variables of the parents reading to the child and the father playing with the child were associated with a greater maturity of the child's language when SES was controlled. The authors emphasized the importance of positive family verbal interactions for a child's language development. In conclusion, the authors postulated that the findings in the "criminological literature that destructiveness and aggressiveness, poor peer relationships, and hyperactivity predict criminality . . . may partly be understood in terms of individual differences in language ability in early life" (p. 376).

Studies of children identified with psychiatric disorders. A growing body of research has reported that approximately 40% to 80% of children presenting with psychiatric disorders have co-occurring language delays (Cohen et al., 1993; Giddan, Milling, & Campbell, 1996; Gualtieri, Koriath, Van Bourgondien, & Saleeby, 1983; Love & Thompson, 1988; Mack & Warr-Leeper, 1992; Warr-Leeper, Wright, & Mack, 1994). A pattern of findings indicates that the co-occurrence of psychiatric disorders and language delays was most evident in boys, many of the language delays were unsuspected, and the pattern and type of language disorder included a range of receptive, expressive, and pragmatic language deficits.

In a study controlling for SES, Love and Thompson (1988) reported a relationship between language disorders and attention deficit disorders, with 65% of the 116 preschool children from various ethnic and socioeconomic backgrounds referred for psychiatric services. The language delays were primarily in the areas of both receptive and expressive language. On measures of psychosocial factors, the 65% with co-occurring language disorders were more likely to come from two-parent families who were in a lower income group and were reported as experiencing greater parent-child conflict.

Cohen et al. (1993) conducted a study examining the prevalence of unsuspected language impairments in 399 4- to 12-year-old psychiatric outpatients. Of the 52% identified with language impairments, 34% had not been previously suspected. When the authors compared the language and behavior functioning of this group with unsuspected language impairments (ULI) to a group with previously identified language impairments (PLI), they noted that the ULI group demonstrated more subtle delays in receptive language skills and were also more delinquent as rated by parents and more aggressive and inattentive as rated by teachers. The PLI group presented with more severe language delays and were rated by parents and teachers as having more internalizing behaviors (i.e., social withdrawal, anxiety). The authors suggested that children's language impairments may not be identified because they are less severe and "are masked by salient external behavior problems" (p. 601). Both groups of children with co-occurring language and behavior disorders came from families of lower socioeconomic status and maternal education.

Giddan et al. (1996) measured the receptive and expressive language skills of 55 children in treatment in a psychiatric facility. The results reported that 60% were determined to have language and/or speech deficits, and 38% were previously undetected. Of the 60% with co-occurring disorders, 67% had a diagnosis of ODD and

ADHD, and 63% had a diagnosis of CD. Analysis of specific type and pattern of language disorders was inconclusive.

Warr-Leeper et al. (1994) measured the language skills of 20 boys, aged 10 to 13 years, with primary diagnoses of ODD and CD and co-morbid ADHD who lived in a residential treatment home. The majority of the participants were from disadvantaged families characterized by marital discord, family readjustment, "abusive/chaotic backgrounds," and lengthy histories of foster care. Comprehensive testing of expressive, receptive, and pragmatic language skills demonstrated that 80% of the sample evidenced a language disorder. The pattern of language difficulties varied across participants; however, as a group, there were more pronounced difficulties with abstract pragmatic listening tasks than with expressive tasks. The authors speculated that "many children with conduct disorders have learned the behaviors associated with the disorder because of language deficits which have not allowed them to be effective in communicating with others" (p. 167).

In the school setting, an emerging body of research has established a strong relationship between behavior disorders and language delays in students identified with mild to severe behavior disorders (Camarata et al., 1988; Griffith et al., 1997; Miniutti, 1991; Prizant et al., 1990). Camarata et al. found that 71% of 39 children aged 8 to 12 years who had mild to moderate behavior disorders met the criteria for a language impairment. Fewer than 6% had previous involvement with speech and language services. Language deficits were significant on tasks of language structure.

Prizant et al. (1990), in a review of the literature suggested that children with significant behavior disorders who also experience communication disorders early in the school years often are not diagnosed as having communication disorders. The authors stated:

> They may be placed in classes for the "behaviorally disordered" or "emotionally disturbed," and because symptomology of emotional behavior disorders is most

> striking or of primary concern, more subtle communication problems that may be involved directly in the development and perpetuation of the behavioral and/or emotional disorder may be overlooked. (p. 186)

Miniutti (1991) reported significant language impairments in 81% of students aged 6 to 9 years old presenting with mild to severe behavior disorders and 89% of students presenting with learning disabilities, compared to 21% of the students in the normal achieving group. All students participating in the study were predominantly male, non-White, from families of lower socioeconomic status, and attending inner-city schools. The language results, measured by the Clinical Evaluation of Language Fundamentals–Revised (CELF-R), showed that the mean expressive and receptive language score of the group with behavior disorders (BD) was significantly lower than that of the normal achieving group and greater than 2 standard deviations below the normative mean. However, the expressive group mean scores of the normal achieving group was greater than 1 standard deviation below the normative mean, and the receptive group mean was close to 1 standard deviation below the normative mean. A within-subjects analysis of language performance showed that the BD group had marked difficulties with an expressive subtest that measured formulating syntactically complex sentences.

Griffith et al. (1997) compared the language skills of two groups of students presenting with behavioral disorders: one group attended a residential program and was considered to have more severe behavioral difficulties and one group attended a day program. The results indicated that 83% of the total of 41 students with severe behavior disorders had total language composites at least 1 standard deviation below the normative mean on a standardized language measure. Overall, expressive language skills were lower than receptive language skills. On a test of pragmatic language skills, 55% of the participants scored at least 1 standard deviation below the mean. The authors concluded that the language problems of both groups were severe and pervasive.

In summary, a substantial number of research studies have demonstrated a strong relationship between behavior disorders and language disorders. In the studies of children already identified with speech and language disorders, the most common occurring psychiatric disorder was ADHD. In the studies of children with a previously diagnosed behavior disorder, a co-morbid ADHD or a high level of inattention on a dimensional measure was present. The pattern and type of language disorder in most studies included a range of receptive, expressive, and pragmatic language deficits. Studies of children with existing behavior disorders reported that a high percentage of language disorders were previously undetected (Camarata et al., 1988; Cohen et al., 1993; Giddan et al., 1996). In most research, the groups of children with co-occurring language and behavior disorders were comprised primarily of male participants from lower income families. As well, studies reported lower maternal education (Cohen et al., 1993; Stattin & Klackenberg-Larson, 1993), single-parent family structure (Beitchman et al., 1986; Stevenson et al., 1985), psychosocial stressors such as family discord and parent-child conflicts (Beitchman, 1986; Cantwell & Baker, 1991; Love & Thompson, 1988; Stevenson et al., 1985), and maternal mental health problems (Beitchman et al., 1996) in the groups with co-occurring disorders.

Reasons for the Relationship

The reasons for the relationship between DBD and language disorders are not well understood. Certainly the risk-factor research on the development of DBD and the research on the relationship between behavior disorders and language disorders has supported the explanation that a number of related child, family, and contextual variables may fully or partially contribute to the onset of both disorders in school-age children. Following is a brief summary of the related variables relevant to this research study.

The research on the relationship between neurological deficits and the development of DBD clearly supported that language deficits are a proximal risk factor in the early years (Henry & Moffitt, 1997; McCain & Mustard, 1999; Moffitt, 1993).

Moffitt's research on neuropsychological deficits supported the relationship between DBD, ADHD, and language deficits. With respect to the link between ADHD and language, Cohen (1996) pointed out that the *DSM-IV* (APA, 1994) criteria for ADHD included characteristics that overlap with pragmatic language disabilities (i.e., difficulty waiting for a turn, interrupting others, blurting out answers to uncompleted questions). Furthermore, Cantwell and Baker (1991, p. 16) reviewed research and reported that the ADHD symptomatology has language components and that ADHD children present with "interactional abnormalities" and display ineffective communication strategies and deficits in verbal fluency.

The parent-related factors of insecure infant-parent attachment, authoritarian parenting style, and harsh and inconsistent discipline for children at risk for DBD are concomitant risk factors for language delays (Bernstein & Tiegerman-Farber, 1997; Hoff-Ginsberg & Tardiff, 1995; Kaiser & Hester, 1997; McCain & Mustard, 1999; Steinhauer, 1997). In addition to the negative parenting practices associated with DBD, Kaiser and Hester provided two additional links that may account for the co-existing language deficits: weak social communication by parents and child and low levels of positive parent and child engagement (i.e., descriptive talk about the child's activities, responsive feedback to child's communication).

The demographic risk factors of low family income and low maternal education strongly related to DBD, and mediated by harsh and inconsistent discipline practices, are also associated with language delays in children (Hoff-Ginsberg & Tardiff, 1995; McCain & Mustard, 1999).

As indicated earlier in the review, emerging research suggested that social-skill deficits may mediate the relationship between language impairments and DBD. Based on the results of a longitudinal study of children from age 5 to 12 years, Beitchman et al. (1996) proposed that early language impairments may lead to behavior problems through difficulties with social relationships. These authors found that a subgroup of boys with

auditory comprehension deficits at an early age demonstrated aggressive behavior, hyperactivity, and low scores on a teacher and parent rating of social skills. The authors suggested that auditory comprehension difficulties at a young age may compromise the development of social problem-solving skills. Vallance et al. (1998) in a study of children with language learning difficulties reported that deficits in pragmatic language were mediated through poor social skills and ultimately manifested in problem behaviors. Initially, the authors found a strong correlation between the variables of pragmatic language skills and social competence. Using a hierarchical regression, Vallance et al. further determined that social competence was a more powerful predictor of the effect of the language-learning disorder on the problem behavior. They proposed that pragmatic language skills are "a vehicle for social competence" (p. 161).

When the research on the reasons for the relationship between behavior disorders and language disorders is viewed form a transactional perspective it is evident that a multitude and complexity of relationships may exist for each unique learner and his/her family. Accordingly, the development of interventions must include a careful analysis of the child, family, and contextual variables that may fully or partially have an impact on the individual's behavior and language development. In the next section the rationale for the current study and the corresponding research questions are presented.

Rationale and Research Questions

When the development of DBD is viewed from a transactional perspective, it is evident from a review of the prevention research that many of the proximal and distal risk factors associated with DBD in school-aged children, such as neurological deficits, social skill deficits, negative parenting practices, and demographic risk factors, are also associated with the development of language deficits (Bierman et al., 1996; Hoff-Ginsberg & Tardiff, 1995; Kaiser & Hester, 1997; McCain & Mustard, 1999; Moffitt, 1993; Steinhauer, 1997). The research on prevention efforts in the school setting,

however, has remained focused primarily on the risk factors of social-skill deficits and negative parenting practices (Coie, 1996; Tremblay et al., 1996; Walker et al., 1995).

Empirical research on the relationship between behavior disorders and language disorders in two clinical populations, including children identified as speech and language impaired and children referred for psychiatric services, reported that a range of 40% to 80% of the children presented with co-existing disorders (see Cohen, 1996; Stevenson, 1996). The most common psychiatric disorder was ADHD and less frequently CD and ODD; most language disorders in children with identified behavior disorders were undetected; and the pattern of language disorder included a range of receptive, expressive, and pragmatic language deficits. Consistent with the prevention research for DBD, many of the children with coexisting disorders came from families with lower income levels and lower maternal education and reported increased parent-child conflict. In the school setting up to 83% of children with identified behavior disorders had co-existing language delays, and most were previously unsuspected (Camarata et al., 1988; Griffith et al., 1997; Miniutti, 1991). This body of research suggests the need for the systematic language screening of children at risk for DBD and the need for teachers, parents, and speech and language pathologists to collaborate to plan and develop programs that meet the language and social needs of the student. A dearth of research is available on language interventions for school-age children at risk for DBD. Interventions are emerging in the preschool setting that may serve as models. However, if research and educational practices are to further address the service-delivery implications to support the language deficits of children at risk for DBD, then evidence for this relationship in the school setting must be well established.

The research on the relationship between behavior disorders and language disorders suggested that related variables may partially or fully contribute to the onset of both disorders. Certainly when this relationship is viewed from a transactional perspective, it is plausible that a range of risk factors may transact over time to contribute

to the development of both disorders. However, as emphasized earlier, the transactional perspective assumes that different combinations of risk factors for different children can result in the same behavioral outcomes and that behavioral outcomes are rarely the result of just the immediate risk factors or just the distal risk factors. Thus, careful consideration of the chain of risk factors is required when planning prevention programs.

Recent research has investigated the relationship between social skills and pragmatic language deficits (Vallance et al., 1998). Because receptive and expressive language skills contribute to the development of pragmatic language deficits (McTear & Conti-Ramsden, 1992), then it is possible that children with social-skill deficits have underlying receptive and/or expressive language skills. This may be critical to explore in light of the relationship between DBD and social-skill deficits.

The primary purpose of the current research study was to determine whether kindergarten and Grade 1 children systematically identified at risk for DBD had co-existing language delays. Thirty-eight children and their respective families were recruited from a total of 14 high-needs schools within an Alberta urban public school system. A screening procedure, consisting of teacher judgment followed by the use of a systematic screening instrument (Student Risk Screening Scale), was used to form two groups of 19 children: one group identified as high risk for the development of DBD and one group identified as low risk for DBD. A nonexperimental causal-comparative design (Borg & Gall, 1989) was used to compare the differences between the LRG and the HRG on measures of behavior and language functioning. Measures of demographics, family functioning, and social skills were also compared to determine whether the differences evident in children identified with a DBD, as reported in the literature, were found in children at risk for DBD.

A series of preliminary analyses was undertaken (a) to confirm the risk status of the HRG and the LRG, including a comparison between the two groups on a standardized parent and teacher rating of attention and externalizing behavior, and correlational

analyses of the scores on the parent and teacher ratings with the screening measure; (b) to compare the HRG and the LRG on demographic variables, including school ranking (according to the districts high-needs list), family structure, family income level, and maternal and paternal education; and (c) to compare the HRG and the LRG on the measures of well-established risk factors of DBD, including family functioning, parenting practices, and social skills. Independent t tests were used to compare mean differences on all the variables.

A series of primary analyses were conducted to compare the receptive and expressive language skills in each group. Independent t tests were conducted to compare the means of receptive and expressive language between the HRG and the LRG. Comparisons of the individual data were made with the normative mean to determine the percentage and type of language delays in each group. A multivariate F test was conducted to determine whether there was a significant difference in the severity of expressive and receptive language skills between and within the HRG and the LRG. As well, a correlational analysis of receptive and expressive language scores, with parent and teacher rating of attention and externalizing scores, was conducted to determine possible relationships between the level of language functioning and the type of behavior problem (externalizing, attention).

A series of secondary analyses were conducted to explore the relationship of expressive and receptive language with demographics, family functioning, and social skills, respectively. Correlational analyses were used to explore the potential relationships. Finally, a regression analysis was conducted to determine whether expressive and/or receptive language skills were significant predictors of social skills. Corresponding to the purposes of this study, the following research questions were raised.

Research Questions

Preliminary Analysis

1. Are there significant differences between the HRG and the LRG on the variable of behavior functioning (attention and externalizing problems) as rated by teachers and mothers and/or fathers on a standardized rating scale?

2. Are there significant correlations between the behavior rated by the teacher on the Student Risk Screening Scale (SRSS) and the behavior (attention and externalizing) as rated by the teachers and the mothers and/or fathers?

3. Are there significant differences between the HRG and the LRG on the selected demographic variables of school ranking, family structure (one-parent, two-parent family), family income level, maternal and paternal education?

4. Are there significant differences between the HRG and the LRG on the variable of general family functioning and parenting practices as rated by mothers and/or fathers?

5. Are there significant difference between the HRG and the LRG on the variable of social skills as rated by the teachers?

6. What is the magnitude of the relationship between the social skills as rated by the teachers and the behavior functioning (attention and externalizing) as rated by the teachers and the parents?

Primary Analysis

1. Are there significant differences between the HRG and the LRG on measures of receptive and expressive language?

2. When individual scores are compared with the normative mean, what are the percentage and type of language delays in the HRG and the LRG?

3. Are there significant differences between expressive and receptive language skills within and between the HRG and the LRG?

4. Are there significant correlations between language functioning and the type of behavior problem (attention or externalizing)?

Secondary Analysis

1. Are there significant correlations between expressive and/or receptive language and the demographic variables, general family functioning and parenting practices, and social skills?

2. If a significant correlation exists between expressive and/or receptive language skills and social skills, are the language skills a significant predictor of social skills?

CHAPTER III

METHODS

Participants

Children and their respective families considered eligible for inclusion in this study were recruited from kindergarten and Grade 1 classes within an urban Alberta public school district. The participating schools were selected from a list of 75 schools on the district's high-needs list. *High needs*, as defined by the school district, were determined based on student mobility (transfers in and out in the previous school year) and the incidence of low family income according to 1996 Statistics Canada information. Thus a school ranked number 1 on the list was considered to have the students and respective families with the highest mobility and highest incidence of low income.

A total of 38 children ranging in age from 5 years to 7 years from 14 schools participated in the study. Schools ranked between 1 and 17, with the exception of one school that ranked 36th on the school district's high-needs list. A screening procedure, described in the following section, was used to form two groups of 19 children: a group identified as high risk for the development of a DBD and one identified as low risk for the development of a DBD. The high-risk group (HRG) was comprised of children from six schools ranked 2nd, 3rd, 8th, 13th, and 15th on the district's high-needs list. The low-risk group (LRG) was recruited from 8 schools different from those attended by the HRG, with the exception of one student who was from the school that ranked 3rd on the high-needs list. Schools were ranked 1st, 3rd, 5th, 7th, 14th, 16th, 17th, and 36th on the district's high-needs list. The LRG was matched with the HRG based on gender and grade level. Therefore each group consisted of 11 male children attending kindergarten and 8 children (5 males, 3 females) attending Grade 1.

The following screening procedures were utilized to recruit students for the HRG and the LRG. Prior to the screening procedures, and upon consent from the school district, initially a total of 13 principals from schools ranking between 1 and 13 on the high-needs list were contacted. Principals and teachers were invited to attend one of the two information meetings: one scheduled to identify students eligible for inclusion in the HRG and one scheduled to identify students eligible for inclusion in the LRG. Additional schools from the high-needs list were contacted as needed, and individual meetings with principals and teachers were scheduled accordingly. A letter describing the rationale for the project; teacher, student, and family time commitments; measures to protect the families' legal and ethical rights; and a general description of procedures and activities was sent prior to the scheduled meetings (see Appendix A).

Screening Procedure

High-Risk Group (HRG)

The participants for the HRG were recruited first. Following the information meeting, teachers who consented to participate (see Appendix A for consent form) were asked to nominate up to five students in their classes who in their judgement might be considered at risk for the development of a disruptive behavior disorder (DBD). The teachers were asked to consider the following seven criteria from the Student Risk Screening Scale (SRSS) when making their judgement: aggressive behavior; negative attitude; low academic achievement; peer rejection; behavior problems; stealing; and lying, sneaking, and/or cheating. Teachers were asked to nominate only those children with whose parents he/she had had previous communication regarding the child's behavior problems. The names of the students nominated were not revealed to the researcher until written informed consent from the parents was obtained.

Once the students were nominated, the teachers were asked to contact the respective families. The teacher was provided with a script (see Appendix A) to briefly

describe the nature of the research and ask for the parent's participation in an individual information meeting about the project. Those parents who were interested in attending the meeting were sent a letter describing the rationale for the project; time commitments of teacher, student, and family; measures to protect the family's legal and ethical rights; and a general description of procedures and activities (see Appendix A).

Low-Risk Group (LRG)

The consent form for teachers and the subsequent screening procedure for the LRG were as described for the HRG. The teachers were asked to consider the seven criteria from the SRSS when making a judgement about those students who were not at risk for the development of a DBD. The students for the LRG were chosen from schools different from those approached to recruit students for the HRG. This prevented the need to categorize and label children as *high risk* and *low risk* to a community of parents whose children attended the same classroom.

This group was purposefully selected to match the HRG on the variables of gender and grade level. This group, therefore, was selected only after testing with the HRG had occurred. Again, the names were not revealed to the researcher until written, informed consent was obtained from the parents. The teacher confirmed with the parent that the child was not experiencing behavior problems at school (see Appendix A, teacher script).

Exclusion Criteria

The following exclusion criteria applied to the students in each of the high-risk and low-risk groups respectively: (a) HRG: a score less than 9 on the SRSS (Drummond, 1993; as cited in Walker et al., 1995), LRG: a score greater than 3 on the SRSS; (b) families and children who did not speak English fluently; (c) children presenting with abnormal hearing as screened by an audiologist or speech and language pathologist; (d) known by teacher and/or evidence in the school records of a previously diagnosed

mental retardation (I.Q. <70), or medically diagnosed neuromotor or neurosensory impairment (e.g., cerebral palsy); and (e) known by teacher and/or evidence in the school records of a diagnosed pervasive developmental disorder (e.g., autism, asperger's syndrome).

The rationale for these exclusion criteria is that language disorders are associated with mental retardation, hearing impairments, neuromotor and neurosensory impairments, pervasive developmental disorders, and English as a second language (Cantwell & Baker, 1991). It is therefore important to control for these factors when establishing a relationship between language delays and behavior problems.

Procedures

Meeting With Parents

High-risk group. Upon obtaining consent to participate in an information meeting, the researcher met with parents individually. A choice of a home visit or meeting at the school was presented to the parent(s).

During this meeting, the rationale for the study, a description of the procedures and activities, and the procedures to protect legal and ethical rights, as explained in the information letter, were reviewed by the researcher to ensure parents' full understanding of the project. Written consent was obtained (see Appendix A). As well, information regarding resources and support services were made available to interested parents.

General demographic information was obtained through a questionnaire form (see Appendix B). The set of rating forms, including the Behavior Assessment Scale for Children, Parent Rating Scale (BASC-PRS, Pre-School or Child Form); Family Assessment Device (FAD); and Alabama Parent Questionnaire, Parent Global Rating Form (APQ), were introduced. Parents were given the option to fill out the rating forms collaboratively or to have one parent individually complete the form. Prior to completing the rating forms with the parents, care was taken to inform them of the nature and content

of the rating forms and of their right to withdraw from the project if they should feel uncomfortable. Assistance with reading and/or marking responses on the rating forms was provided as needed. As well, the researcher remained to address any questions arising during or after the completion of the rating forms. The rating forms took approximately 45 minutes to complete.

Low-risk group. Procedures for meeting with the parents of the LRG were generally as described for the parents of children in the HRG. However, because the nature of the research was less sensitive to the parents of the LRG, the researcher arranged to meet parents from each school in small groups. As well, given the nature of the questions on the Parent Rating Form of the BASC, the parents were assured that the teachers had not identified their child as having behavior problems at school. The meetings with parents of the LRG did not occur until the testing of the HRG was completed.

Student Testing

Following the parent meetings and completion of the parent rating forms, students' school records were accessed to review any previous cognitive, behavior, language, and hearing assessments. Cognitive assessments, if available, were reviewed only for the purpose of determining eligibility for inclusion. Data from previous language assessments and hearing screenings were utilized only if the Clinical Evaluation of Language Fundamentals-Preschool (CELF-P; Wiig, Secord, Semel, 1992), Clinical Evaluation of Language Fundamentals-Revised (CELF-R; Semel, Wiig, & Secord, 1987), or Clinical Evaluation of Language Fundamentals-Third Edition (CELF-3; Semel, Wiig, & Secord, 1995) had been administered within the last six months.

Students who had not been assessed within the previous 6 months, were individually tested by a trained speech and language pathologist using the Clinical Evaluation of Language Fundamentals-Revised (CELF-R). Those students who had not received a previous and/or recent hearing screening also received this screening by the

speech and language pathologist. The testing time was approximately 60 minutes. Parents who requested were permitted to remain and observe the language testing. Upon completion of the individual testing, the speech and language pathologist scored each protocol and then provided it to the researcher.

Teacher Completion of Forms

The SRSS and a set of rating forms, including the Behavior Assessment Scale for Children-Teacher Rating Form (BASC-TRS) and the Social Skills Rating System (SSRS), were distributed to the teachers. The forms took approximately 20 to 30 minutes per child to complete. Upon completion, teachers mailed the forms to the researcher. The SRSS was scored by the teacher and reviewed by the researcher. The BASC-TRS and SSRS forms were scored by the researcher.

Reporting of Results

Both parents and teachers were provided with a brief report of the results of receptive and expressive language skills (CELF-R/CELF-P), social skills (SSRS), and teacher rating of behavior (BASC-TRS). If the participant presented with an unsuspected language delay, the teacher and parent were contacted prior to the report.

Measuring Instruments

Screening

Student Risk Screening Scale. The SRSS, as reviewed by Walker et al. (1995), is a brief mass-screening procedure for use by elementary teachers for the identification of students at risk for the development of a CD. It consists of a seven-item scale, including (a) stealing; (b) lying, cheating, sneaking; (c) behavior problems; (d) peer rejection; (e) low academic achievement; (f) negative attitude; and (g) aggressive behavior. Teachers were requested to score each student in their classroom on the seven items on a 0 to 3 scale in which 0 = *never*, 1 = *occasionally*, 2 = *sometimes*, and 3 = *frequently*. Students were then placed into three risk score categories: high risk = 9 to

21; moderate risk = 4 to 8; and low risk = 0 to 3. This screening procedure took approximately 10 minutes for the teacher to complete. For the purpose of this research, the teacher did not screen the entire class of students. Instead only participants in this study were screened on the SRSS.

Walker et al. (1995) reported the SSRS to be a "highly effective and technically sound" (p. 51) instrument. The authors reported excellent validity and reliability. As a screening instrument, it helps teachers to distinguish non-at-risk students from those who show the early signs of conduct problems. As well, it allows teachers to identify those students at risk as early as kindergarten.

The published form of this instrument was not available to the researcher. Permission for use of the instrument was obtained from the author, and a modified form was developed for the purpose of this research (see Appendix B).

Behavioral Functioning

Behavior Assessment System for Children. The Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992) is a standardized multimethod and multidimensional rating scale used to measure the behavior of children aged 4 to 18 years. The parent rating scales (PRS) and teacher rating scales (TRS) of the preschool (ages 4-5) or child form (ages 6-11) were used depending on the child's age. For the purpose of this study, only the scales comprising the externalizing problems composite (preschool form: aggression, hyperactivity; child form: aggression, conduct problems, hyperactivity) and attention scale of the clinical scales of the parent (PRS) and teacher (TRS) rating forms were used. The respondent rates items on a 4-point scale of frequency ranging from *never* to *almost always*. The TRS and PRS yield scaled T-scores with a mean of 50 and a standard deviation of 10. The manual classified scores on the clinical scales between 1 and 2 standard deviations above the mean (60-70) as "at risk," and those 2 or more standard deviations above the mean as "clinically significant." The general norms were used. These norms are based on a large national sample representative of

American children with regard to gender, race/ethnicity, and clinical or special education classification; and, for the PRS, the parent's education.

In terms of reliability, the manual reported high internal consistencies of the preschool and child scales (TRS, PRS), averaging above .80; test-retest coefficient alphas ranging from .67 to .91; and interrater reliability coefficients greater than .82 for all scales on the TRS and PRS. The externalizing composite score is particularly reliable on both the TRS and the PRS (>.89). The manual offered three types of evidence for the validity of the PRS and TRS: empirical factor analytic support for the construct validity of the scales, correlations between TRS and PRS scaled and composite scores with those obtained on other behavior measures, and the similarity of PRS and TRS profiles to groups of children with particular clinical diagnoses (i.e., CD, ADHD, depression, learning disability). Because the BASC has been published more recently than other behavior rating scale instruments, there is less research on the validity of its scales (Kamphaus & Frick, 1996).

The manual reports that correlations between teacher and parent ratings increased with age and ranged from .26 on the externalizing composite and 0.41 on the attention scale at the preschool level, and 0.51 on the externalizing composite and 0.62 on the attention scale at the child level.

Language Functioning

Clinical Evaluation of Language Fundamentals-Revised. The Clinical Evaluation of Language Fundamentals-Revised (CELF-R; Semel et al., 1987) is an individually administered standardized clinical tool for the identification of language-skill deficits in children aged 5 to 16 years. The core battery of six subtests is designed to measure receptive and expressive language skills. The subtests include linguistic concepts, word classes, and word associations in the receptive domain; and sentence structure, word structure, and oral directions in the expressive domain. The CELF-R provides normative scores to describe a child's language skills in relation to age-matched

peers. It yields three composite scores: a receptive language score, an expressive language score, and a total language score, all which have a mean of 100 and a standard deviation of 15. For the purpose of this study, only the expressive and receptive composite scores were used. The severity of language deficit, as outlined in the manual, were used to rate each participant's receptive and expressive composite score. They are as follows:

- Normal: within 1 SD and above (composite standard score 86 and above)
- Mild: -1 to -1.5 SD (composite standard score range 78-85)
- Moderate: -1.5 to -2 SD (composite standard score range 71-77)
- Severe: -2 SD and below (composite standard score range 70 and below)

The CELF-R was normed on a nonclinical population of 2,426 children between the ages of 5 and 16 years in a wide variety of regions in the United States. The internal consistency reliability coefficients for composite scores are generally greater than .90. The test-retest reliability coefficients at age 6 years for the receptive and expressive composite scores were .73 and .90, respectively. The interscorer reliability of the subtest Word Associations was 82% at the 6-years age level. The CELF-R is widely used in research, and the test manual provided a large number of studies demonstrating adequate construct, concurrent, and discriminant validity (Semel et al., 1987). Correlation between the CELF-P and CELF-R is relatively high, with coefficients of .71 on the expressive language composite score and .84 on the receptive language score (Semel et al., 1987).

It was beyond the scope of this research to diagnose a language disorder. Therefore, the CELF-R was used only to determine evidence of delay in the areas of expressive and receptive language.

Social Skills

The Social Skill Rating System. The Social Skill Rating System (SSRS; Gresham & Elliot, 1990) is a standardized multirater (parent, teacher, and self) assessment of children's social behaviors. For the purpose of this study, only the teacher

form (K-6) was used, which included three scales measuring cooperation (e.g., helping others, sharing materials, complying with rules and directions), assertion (e.g., initiating interactions, making friends, responding to the actions of others), and self-control (e.g., responding to teasing in an appropriate manner, taking turns, compromising). The teacher rates each skill using a 3-point frequency of occurrence score: 1 = *never*, 2 = *sometimes*, and 3 = *always*. For this study, the total standard score with a mean of 100 and a standard deviation of 15 was used.

The standardization sample consisted of 1,335 children aged 3 to 18 years across the United States. In terms of reliability, the manual reported high internal consistencies of .94 for the total score on the teacher form (K-6), and test-retest correlations of .85 (Gresham & Elliot, 1990). High content, construct, and criterion validity have been well established for this scale (Gresham & Elliot, 1990). The manual reported evidence of the factor analysis support for the scale structure and correlations with other rating scale measures of social skills.

Family Functioning

The McMaster Family Assessment Device. The McMaster Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983) is a 60-item self-report instrument designed to measure the six dimensions of family functioning outlined in the McMaster Model of Family Functioning. This model is based on systems, role, and communication theories and evolved from work with nonclinical families (Sawin & Harrigan, 1994). The FAD is made up of seven scales: general functioning, problem solving, communication, roles, affective involvement, affective responsiveness, and behavior control. For the purposes of this study, only the general functioning scale was used because it assesses the overall health/pathology of the family. The general functioning scale is comprises 12 items derived to correlate highly with the other six scales. Internal consistency reliability is highest for this scale, with coefficient alphas ranging from .83 to .86 (Kabacoff, Miller, Bishop, Epstein, & Keitner, 1990). These authors further cited

research that supported the use of the general functioning scale as a single index to represent overall functioning. In addition to its use with families responding to the needs of medical illness and adolescent mental health issues, the FAD has been well established in the research with families responding to the demands of a wide range of psychiatric problems (Sawin & Harrigan, 1994).

A 4-point Likert scale is employed to determine a member's perception of the family. Clinical cut off points have been established to separate effective and clinically problematic functioning families from each other. Scale scores range from 1.00 *(healthy)* to 4.00 *(unhealthy)*. The clinical cut off score of 2.0 differentiates between healthy and unhealthy family functioning.

Alabama Parenting Questionnaire. The Alabama Parenting Questionnaire (APQ; reviewed in Kamphaus & Frick, 1996; Shelton et al., 1996) is a multimodal and multi-informant assessment system designed to assess the five areas of parenting practices that have been consistently associated in the research with CD: parental involvement, monitoring/ supervision, use of positive parenting techniques, inconsistency in discipline, and harsh discipline. It has four components: parent and child global forms, and parent and child telephone interviews. For the purpose of this study, only the parent global form was used. The parent global form is a 42-item self-report instrument using a 5-point frequency scale ranging from 1 *(never)* to 5 *(always)*. The APQ includes a Parental Involvement scale (10 items), a Positive Parenting scale (6 items), a Poor Monitoring/Supervision scale (9 items), an Inconsistent Discipline scale (6 items), and a Corporal Punishment scale (3 items). Seven additional items measuring specific discipline practices other than corporal punishment were included so that the corporal punishment items were not asked in isolation of other forms of discipline. Items on the first two scales are worded in a positive direction; therefore a higher score attained on these scales indicates more positive parenting practices. The items on the latter three

scales are worded in a negative direction; therefore a higher score indicates more negative parenting practices.

The development of the APQ is still in its infancy and it has been used for research purposes only. The psychometric properties have not been sufficiently developed to permit wide use in clinical settings (Shelton et al., 1996). Normative data and clinical cut off scores for the specific scales have not yet been developed.

Shelton et al. (1996) reported initial reliability and validity results in families of 160 children, 124 of them clinic referred and 36 community volunteers. The testing of internal consistency reliability resulted in coefficient alphas in the clinical sample ranging from .45 *(corporal punishment)* to .80 *(involvement)*. The authors pointed out that the low internal consistency with the corporal punishment scale is likely due to the scale having only three items. Reports from parents were generally not associated with measures of socially desirable responding. The parent global form, with the exception of the two positive parenting scales, was generally reported to be useful for differentiating families of children with a disruptive behavior diagnosis, as per the *DSM-III-R* and defined by teacher report alone, from families of normal volunteer children screened for DBD.

Data Analysis

Preliminary Analysis

Confirmation of risk status. Descriptive statistics were employed to compute the mean and standard deviations of the Student Risk Screening Scale and the BASC parent and teacher ratings on the attention and externalizing scales. The range of HRG and LRG scores on the SRSS was confirmed with the risk category cut off scores as recommended in the literature (Walker et al., 1995). A series of independent t tests of means were calculated to determine whether significant differences in means existed between the HRG and the LRG on the BASC parent and teacher ratings on the attention and externalizing scales. An alpha level of .05 was used to determine statistical significance.

The BASC parent and teacher rating of attention and externalizing scale scores were then compared with the normative means as reported in the test manual (Reynolds & Kamphaus, 1992). Finally, Pearson correlations were conducted to determine the magnitude of the relationship between the SRSS scores and the BASC parent and teacher attention and externalizing scores. Correlations ranging from .1 to .3 were considered small, .3 to .5 moderate, and >.5 were considered large (Kenny, 1987).

Measures of demographic variables. Descriptive statistics were employed to compute the means and standard deviations of the demographic variables of school ranking, family income level, and years of maternal and paternal education within each group. Family income levels were indexed by four levels of income (1 = *low*, 4 = *high*). A series of independent t tests of means were calculated to determine whether significant differences in means existed between the HRG and the LRG on these variables. An alpha level of .05 was used to determine statistical significance. Percentages were calculated for the demographic variable of family structure (one-parent, two-parent families). A Pearson chi-square was conducted to determine whether a significant difference existed between the HRG and the LRG on this variable.

Measures of family functioning, parenting practices, and social skills. Descriptive statistics were employed to compute the means and standard deviations of the FAD general family functioning scale; the subscales of the APQ, including involvement, positive parenting, poor monitoring, inconsistent discipline, corporal punishment; and the Social Skills Rating System (SSRS). A series of independent t tests was conducted to determine whether a significant difference existed between the HRG and the LRG on each variable. An alpha level of .05 was used to determine statistical significance. The HRG and the LRG mean scores on the general family functioning scale were compared to the clinical cut off scores reported in the literature (Miller et al., 1985). Group mean and individual scores on the SSRS were compared to the normative mean as reported in the test manual (Gresham & Elliot, 1990). Further Pearson correlations were computed

between the SSRS scores and the BASC attention and externalizing scores to determine the magnitude of the relationship between social skills and risk for DBD.

Primary Analysis

Descriptive statistics were employed to compute the means and standard deviations of the HRG and the LRG on the CELF-R expressive and receptive language scores. A series of independent t tests were conducted to determine whether a significant difference existed between the HRG and the LRG on receptive and expressive language. An alpha level of .05 was used to determine statistical significance. The individual receptive and expressive language scores of the HRG and the LRG were compared with the normative mean and with the classification scheme of language delays as reported in the test manual (Semel et al., 1987). The percentage of language delays was then calculated for each group. A Roy's Largest Root multivariate F test was conducted to determine the differences between receptive and expressive language scores within and between the HRG and the LRG. Finally, Pearson correlations were conducted to determine significant correlations between the expressive and receptive language scores and the BASC parent and teacher rating of attention and externalizing scaled scores.

Secondary Analysis

Pearson correlations were conducted to determine significant correlations between receptive and expressive language scores and the following data: (a) level of family income; (b) maternal and paternal education; (c) the general family functioning scale; (d) the APQ parenting subscales: involvement, positive parenting, poor monitoring, inconsistent discipline, corporal punishment; and (e) the SSRS. Finally, a Stepwise regression analysis between the CELF-R expressive and receptive language scores and the SSRS scores was conducted. The CELF-R expressive and receptive language scores were entered as predictor variables, and the social skill scores were entered as the criterion variable.

The following chapter provides an analysis of the results.

CHAPTER IV

RESULTS

The results of the current investigation pertaining to the three phases of data analysis are presented in this chapter. The preliminary analysis reports the results of the confirmation of the risk status and the comparison of the HRG and the LRG group on the demographic, family functioning, and social skill variables. The primary analysis describes the results of the series of comparisons between the HRG and the LRG on the measures of receptive and expressive language. Percentage and type of language delay are described in each group. As well, correlations between the measures of behavior and language are presented. The secondary analysis presents the results of the correlation analysis between expressive and receptive language and the demographic, family functioning, and social skill variables. Finally, the results of the regression analysis between receptive and expressive language and social skills are described.

Preliminary Analysis

Confirmation of the Risk Status of the HRG and the LRG

The following section first presents the means and standard deviations of the HRG and the LRG on the SRSS. Second, the results of the t tests of the mean differences between the HRG and the LRG on the BASC parent and teacher ratings of attention and externalizing scale scores are described. Further comparisons of the HRG and the LRG group means on the BASC parent and teacher ratings of attention and externalizing scale scores are made with the normative means. Finally, the results of a correlation analysis are presented to determine the magnitude of the relationship between the SRSS and the BASC parent and teacher ratings of attention and externalizing scale scores.

Results of the Student Risk Screening Scale (SRSS). The purpose of the SRSS was to systematically validate the teacher's judgment initially used to recruit students for the HRG and the LRG. The range of scores of the HRG on the SRSS was between 9 and 17, with a mean of 13.68 and a standard deviation of 2.45. The range of scores of the LRG was between 0 and 2, with a mean of 0.31 and a standard deviation of 0.58. All the scores of the HRG and the LRG were well within the high-risk range (9-21) and the low-risk range (0-3) respectively, as identified in the literature (Walker et al., 1995).

Comparison of the BASC mean attention and externalizing scores of the HRG and the LRG on the parent and teacher rating scales: As indicated in the literature, an important component of the screening process is the use a standardized measure of teacher and parent rating. As shown in Table 1, the mean HRG's scores on both the BASC attention and the externalizing scales, teacher ($x = 73.21$, $x = 69.05$) and parent ratings ($x = 61.32$, $x = 58.26$) were significantly higher than the scores on the LRG teacher ($x = 41.68$, $x = 43.32$) and parent ratings ($x = 50.63$, $x = 49.89$). The t tests showed all differences to be significant at the .019 level or better. The significant difference in scores between the HRG and the LRG on the teacher ratings confirmed, with a standardized measure, the results of the teacher nomination and screening process. The significant differences between the HRG and the LRG on the parent rating scales of attention and externalizing behavior corroborated the teacher rating of increased at-risk behavior in the HRG.

The BASC mean attention and externalizing scale scores of the HRG and the LRG on the parent and teacher ratings were also compared to the normative means of 50 based on the standardization sample as outlined in the test manual (Reynolds & Kamphaus, 1992). As expected, the attention and externalizing mean scale scores of the LRG on both teacher and parent ratings were within 1 standard deviation of the normative mean. In contrast, the attention and externalizing means of the HRG as rated by the teachers ranged from 1 to 2 standard deviations above the normative mean and

classified in the "at risk" and "clinically significant" range (p. 12). However, it is worth noting that the mean score on the attention scale of the HRG on the parent rating scale was greater than 1 standard deviation above the normative mean and classified in the "at risk" range (p. 12). Again, particularly on the scale of attention, this confirms the risk status of the HRG and the LRG.

Table 1

Comparison of the BASC Mean Attention and Externalizing Scaled Scores of the HRG and LRG, Parent and Teacher Ratings

	HRG (N=19)		LRG (N=19)				
Variable	Mean	SD	Mean	SD	t-value	df	2-tail sig
Parent:							
Attention	61.32	1.53	50.63	6.72	3.489*	36	.001
Externalizing	58.26	0.38	49.89	10.64	2.454*	36	.019
Teacher:							
Attention	73.21	7.24	41.68	6.97	13.677*	36	.000
Externalizing	69.05	1.73	43.32	4.91	8.822*	36	.000

$p<.05$.

Correlation of the SRSS with the BASC attention and externalizing scale scores, parent and teacher ratings: A correlation analysis was used to determine the magnitude of the relationship between the SRSS scores and the BASC attention and externalizing scale scores, parent and teacher ratings. As shown in Table 2, high correlation was obtained between the SRSS scores and the teacher ratings, BASC attention and externalizing scale scores ($r = .837$, $r = .767$, $p = .000$). Moderate

correlations were found between the SSRS scores and the parent ratings on the BASC attention scale ($r = .487$, $p = .002$), and the externalizing scale ($r = .386$, $p = .017$).

Table 2

Correlation Matrix of the SRSS Scores With the BASC Attention and Externalizing Scale Scores, Parent and Teacher Ratings

	Parent attention	Parent externalizing	Teacher attention	Teacher externalizing	SRSS
Parent attention		.587^{xx}	.516^{xx}	.391^{x}	.487^{xx}
Parent externalizing			.332^{x}	.395^{x}	.386^{x}
Teacher attention				.745^{xx}	.837^{xx}
Teacher externalizing					.767^{xx}
SRSS					

$^{x}p < .05$
$^{xx}p < .01$

As well, all correlations between the parent ratings and teacher ratings were significant. A high correlation was found between the BASC parent rating of attention and the BASC teacher rating of attention ($r = .516$, $p = .001$). A moderate correlation was significant between the parent BASC externalizing score and the teacher externalizing score ($r = .395$, $p = .014$). The significant correlations between parent and teacher rating scale scores also confirmed the risk status of the HRG and the LRG. It is worth noting that although the teacher and parent ratings were significantly correlated, the mean HRG

teacher ratings on both attention and externalizing scales were higher than the mean HRG parent ratings on both of the behavior scales.

In summary, the risk status of the HRG and the LRG, initially determined by teacher nomination and rating on the SRSS, was confirmed by the following results: (a) The means of the HRG on both the parent and the teacher rating of attention and externalizing scales were significantly higher than the LRG means; (b) comparison of the group means to the normative mean indicated that the HRG BASC teacher rating attention scale was in the clinically significant range, teacher rating externalizing scale was in the at-risk range, and parent rating attention scale was in the at-risk range; conversely all LRG teacher and parent ratings were in the average range; and (c) correlations were significant between all the BASC teacher and parent ratings attention and externalizing scale scores and the SRSS scores. Also worth noting is that although all the teacher and parent ratings were significantly correlated, the teacher ratings on both the attention and the externalizing scores were higher than the parent rating on the attention and externalizing scales.

Comparison of the HRG and the LRG on Demographic Variables

The following section presents the results of the comparison of the HRG and the LRG on the demographic variables of school ranking (according to the school district's high-needs list), family structure (one-parent, two-parent family), family income, and maternal and paternal education. As previously noted, the HRG and the LRG were matched according to gender and grade level. Accordingly, each group was comprised of 16 male children (11 kindergarten and 5 Grade 1) and 3 female Grade 1 children.

Comparison of the HRG and the LRG on school ranking. The rankings of schools in the HRG and the LRG ranged from 1 to 17, with the exception of one school in the LRG that ranked 36th; therefore, they are considered to have higher needs in the district based on high student mobility and low family income levels. A t test of the mean differences of the school rankings on the high-needs list between the HRG ($x = 8.50$) and

the LRG (x = 12.38) was not significant (p = .454). It can be assumed that, based on the school district's high-needs criteria, both groups come from communities that are comparable in terms of a lower level of family income and from schools that are comparable in terms of higher levels of student mobility.

Comparison of the HRG and the LRG on family structure. Although there were slightly more two-parent families in the LRG (N=14) than in the HRG (N=11), a chi square analysis shows that the groups did not differ significantly on the percentage of one-parent and two-parent families ($x2 = 1.052$, df = 1, $p>.30$).

Comparison of the HRG and the LRG on income level and maternal and paternal education: Table 3 presents a comparison of the HRG and the LRG on the variable of SES including income level indexed by four levels of income (1 = *low*, 4 = *high*), years of maternal education, and years of paternal education. The table shows that both the mean income level (x = 3.42) and the mean maternal education (x = 12.11) of the LRG were significantly higher than those of the HRG (x = 2.21, x = 10.50). A t test of the differences was significant on the income level at the .000 level and on maternal education at the .003 level. The HRG and the LRG did not differ significantly on paternal education.

In summary, both groups come from schools comparable in high needs, based on the school district's criteria of low family income and high student mobility. However, the HRG mean family income level and the level of maternal education were significantly lower than those of the LRG. There were no significant differences between the groups on the variables of family structure and paternal education.

Comparison of the HRG and the LRG on Measures of Family Functioning

General Family Functioning Scale. Contrary to what was expected, the t test of the mean difference between the HRG and the LRG on the general family functioning scale of the Family Assessment Device (FAD) was not significant (p = .120). The mean scores for both the HRG and the LRG on the general functioning scale were considered

within the range of healthy family functioning based on the clinical cut off score established by Miller et al. (1985).

Table 3

Comparison of Family Income Levels and Maternal and Paternal Level of Education of LRG and HRG Participants

Variable	HRG		LRG		t-value	df	2-tail sig
Income level	N=19		N=19				
	Mean	SD	Mean	SD			
	2.21	.91	3.42	.96	-3.971*	36	.000
Maternal education	N=18		N=17				
	Mean	SD	Mean	SD			
	10.50	2.03	12.11	2.26	-.227*	33	.003
Paternal education	N=14		N=15				
	Mean	SD	Mean	SD			
	10.92	2.01	12.2	2.04	-1.685	27	.104

Note: Income level: 1 = $0-$10,000, 2 = $11,000-$20,000, 3 = $21,000-$30,000, 4 = above $31,000.
Maternal education is maternal years of education. *Paternal education* is paternal years of education.
p<.05.

Alabama Parenting Questionnaire (APQ: Parent Global Form). As shown in Table 4, the HRG mean scores on the subscales of poor monitoring (x = 15.31) and corporal punishment (x = 5.52) were significantly higher than the LRG (x = 11.78, x = 4.05). The t test of means showed significant differences better than .003. These significant differences suggest a trend towards less parental monitoring and a higher use

of corporal punishment in the HRG than in the LRG as rated by the parents. The HRG mean score on the subscale of involvement (x = 38.26) was significantly lower (p>.05) than the LRG mean score (x = 41.47) when a one-tailed test of significance was used. A high score on this subscale is indicative of lower parental involvement and therefore suggests a trend in the HRG of less involvement than in the LRG. There were no significant differences between the HRG and the LRG on the scales of positive parenting and inconsistent discipline.

Table 4

Comparison of Parenting Practices of the HRG and the LRG on the Alabama Parenting Questionnaire (APQ)

	HRG (N=19)		LRG (N=19)				
Variable	Mean	SD	Mean	SD	t-value	df	2-tail sig
Involvement	38.36	6.63	41.47	3.90	-1.818	36	.077
Positive parenting	26.21	2.69	27.00	1.56	-1.103	36	.277
Poor monitoring	15.31	4.54	11.78	1.96	3.104*	36	.004
Inconsistent discipline	13.52	4.95	12.10	3.03	1.065	36	.294
Corporal punishment	5.52	1.38	4.05	1.47	3.175*	36	.003

* p< .05

Comparison of the HRG and the LRG on the Social Skills Rating System (SSRS)

As shown in Table 5, the mean score for the HRG on the SSRS (x = 70.58) was significantly lower than the mean score for the LRG (x = 116.53). There is a large mean difference of approximately 46 points. A t test of the differences between the HRG and the LRG on the SSRS was significant at the .000 level.

Table 5

Comparison of the HRG and the LRG on the Social Skills Rating System (SSRS)

	HRG		LRG				
Variable	Mean	SD	Mean	SD	t-value	Df	2-tail sig
SSRS	70.58	9.64	116.53	9.82	-14.552*	36	.000

*p<.05

The mean scores of the HRG and the LRG were compared with the normative mean of 100 and standard deviation of 15 as reported in the test manual (Gresham & Elliot, 1990). The mean score of the HRG was 2 standard deviations below the normative mean, suggesting fewer social skills than would be expected when compared to the standardization sample. An inspection of individual scores revealed that 18 of the 19 participants in the HRG had standard scores greater than 1 standard deviation below the normative mean. The mean score of the LRG was greater than 1 standard deviation above the normative mean, suggesting more social skills than would be expected when compared to the standardization sample. All participants in the LRG had standard scores that ranged within or greater than 1 standard deviation of the normative mean.

Correlations of the SSRS Scores With the BASC Parent and Teacher Rating of Attention and Externalizing Scale Scores

To determine the magnitude of the relationship between social skills and behavior functioning, a further correlation analysis was conducted. High significant negative correlations were obtained between the SSRS scores and the BASC teacher attention scores ($r = -.905$, $p = .000$) and the teacher externalizing scores ($r = -.816$, $p = .000$). This suggests a strong relationship between lower social skills and higher levels of externalizing and inattention as rated by the teacher. Furthermore, moderate significant negative correlations were obtained between the SSRS scores and the BASC parent attention scores ($r = -.462$, $p = .003$) and parent externalizing scores ($r = -.364$, $p = .025$).

In summary, the preliminary analysis showed significant differences between the HRG and the LRG on the parent and teacher ratings of attention and externalizing behavior, and the demographic variables of family income and maternal education. Group differences were not significant on the measure of general family functioning, and both groups were considered within the range of healthy family functioning. However, when specific parenting practices were measured, differences were significant on the subscales of involvement, poor monitoring, and corporal punishment. The significant differences suggested a trend towards less parental involvement, less parental monitoring, and a higher use of corporal punishment in the HRG. The social skills as rated by the teacher were significantly lower in the HRG, with a mean difference of 46 points. High significant correlations were found between social skills and the teacher rating of behavior (externalizing and attention) and moderate correlations between the parent rating of behavior confirmed the strength of the relationship between risk for DBD and social skill deficits.

Primary Analysis

The following section addresses the primary purpose of this research: to determine whether students identified as high risk for DBD had co-existing receptive and/or expressive language delays. First, the results of a t test of differences of the mean receptive and expressive scores of the HRG and the LRG are reported. Second, a comparison of the individual scores in the HRG and the LRG to the normative mean is made to determine the percentage and type of language delays in each group. As well, the results of a multivariate F test are described to address the differences in the mean expressive and receptive language scores within and between the groups. Finally, a correlation analysis of receptive and expressive language scores with teacher and parent rating of attention and externalizing scores is presented to address possible relationships between level of language functioning and the type of behavior problem (externalizing, attention).

Comparison of the Mean Receptive and Mean Expressive Language Scores Between the HRG and the LRG

As shown in Table 6, the HRG mean receptive (85.26) and expressive scores (80.26) were significantly lower than the LRG mean receptive (94.42) and expressive scores (91.37). A t test of the mean differences of the HRG and the LRG was significant at the .042 level on the mean receptive scores and at the .020 level on the mean expressive scores. The following section compares the individual scores to the normative mean to determine the percentage and type of language delays present in each group.

Table 6

Comparison of Receptive and Expressive Language of the HRG and the LRG on the CELF-R

	HRG (N=19)		LRG (N=19)				
Variable language	Mean	SD	Mean	SD	t-value	df	2-tail sig
Receptive	85.26	13.22	94.42	13.56	-2.108*	36	.042
Expressive	80.26	5.05	91.37	12.94	-2.439*	36	.020

*$p<.05$

Comparison of the HRG and the LRG Expressive and Receptive Mean Scores With the Normative Mean

The test manual (Semel et al., 1987) reported a normative mean of 100 and standard deviation of 15. According to the classification scheme, scores that fall within 1 to 1.5 standard deviations below the mean (78-85) are indicative of mild language delays, 1.5 to 2.0 standard deviations are indicative of a moderate language delay, and 2.0 standard deviations or greater are indicative of severe language delays. Inspection of individual data using this classification scheme revealed that of the 19 children in the HRG, 15 (78.94%) presented a language delay. Of those 15, three children presented with a receptive language delay, two children presented with an expressive language delay, and 10 children presented with both a receptive and an expressive delay. Of the 15 children with language delays, 11 were undetected by teachers and parents.

In the LRG, seven of the 19 children (36.84%) presented with a language delay. Of those seven, one child presented with a receptive language delay, one child presented with an expressive language delay, and five children presented with both a receptive and

an expressive language delay. All seven children presented with language delays that were undetected by the teacher and parents.

It is important to note that although the mean receptive and expressive scores of the HRG were significantly lower than the mean receptive and expressive scores of the LRG, both groups had mean receptive and expressive language scores below the normative mean of 100 as reported in the test manual.

Comparison of the Mean Expressive and Receptive Scores Within and Between the HRG and the LRG

Although most of the language delays in the HRG and the LRG were both receptive and expressive in type, the mean expressive scores in both the HRG and the LRG were lower than the mean receptive scores. A multivariate F test confirmed the significant difference between the mean expressive and receptive scores within both the HRG and the LRG ($p = .041$) and, a significant difference in the mean expressive and receptive scores between the HRG and the LRG ($p = .016$). Therefore, both the HRG and the LRG presented with significantly lower expressive language scores than receptive language scores.

An inspection of individual subtest scores revealed that a significant number of participants with language delays (64%) consistently scored a standard deviation below the mean on an expressive language subtest that measured formulating syntactically correct sentences.

Correlations of the CELF-R Receptive and Expressive Language Scores With the BASC Parent and Teacher Rating of Attention and Externalizing Scale Scores

To determine possible relationships between language functioning and the type of behavior problem (externalizing, attention), further correlational analyses were conducted. Moderate negative correlations were significant between the BASC teacher rating attention scale score and the receptive language scores ($r = .391$, $p = .015$) and the teacher rating BASC attention scale score and the expressive language scores ($r = .487$,

p = .002). This suggests a relationship between higher levels of inattention and lower receptive and expressive language skills. Contrary to what was expected, negative correlations were not significant between the expressive and/or receptive language scores and the BASC teacher rating externalizing scale (r = -.273 p = .097). However, further inspection of the individual scores of the HRG on the BASC teacher rating externalizing scale indicated that of the 15 students with a language delay, 13 presented with externalizing scores at least 1 standard deviation above the normative mean, suggesting externalizing behavior in the at-risk range.

Correlations between expressive and/or receptive language and the BASC parent rating externalizing and attention scales were not significant. Further inspection of the individual data of the BASC parent externalizing scale scores of the HRG revealed that just over half (8) of the 15 students with language delays had externalizing scores at least 1 standard deviation greater than the normative mean. Inspection of the data of the BASC parent attention scale revealed that seven of the 15 students with language delays had attention scores at least 1 standard deviation greater than the normative mean.

In summary, the following main findings emerged. First, the HRG mean expressive and receptive language scores were significantly lower than the LRG scores. When the group means were compared to the normative mean, 78.94% of the HRG presented with a language delay, whereas only 36.84% of the LRG presented with a language delay. When the type of language delays were examined within the HRG and the LRG, most participants presented primarily with both receptive and expressive language delays. However, the mean expressive language scores were significantly lower than the mean expressive language scores within and across groups. Most of the language delays in HRG and all in the LRG were undetected by teachers and/or parents. Although the mean receptive and expressive scores were significantly lower in the HRG than in the LRG, both groups had mean receptive and expressive scores below the normative mean. Finally, a moderate significant correlation was obtained between receptive and expressive

scores and the BASC teacher rating attention scale score. Although correlations were not significant between receptive and expressive language scores and the BASC teacher rating externalizing scale, inspection of individual data revealed a high proportion of HRG participants with language delays had externalizing scores in the at-risk range.

Secondary Analysis

The following section reports the results of a correlational analysis between receptive and expressive language skills and the demographic factors of family income, maternal and paternal education, the general family functioning scale, the parenting practice subtests of the APQ, and social skills. Finally, the results of a regression analysis between the CELF-R language scores and the SSRS scores are described.

Correlational Analysis

Although a total of 144 correlations were computed, for the purpose of this secondary analyses, only those correlations involving the CELF-R receptive and expressive language scores are reported. Moderate significant correlations were obtained between CELF-R expressive language scores and maternal education ($r = .345$, $p = .042$), paternal education ($r = .442$, $p = .016$), and social skills ($r = .360$, $p = .026$). Correlations between the CELF-R expressive scores and the level of family income, the general family functioning scale, the parenting subtests of the APQ were not significant. Correlations between the CELF-R and the level of family income, maternal and paternal education, the general family functioning scale, the parenting subtests of the APQ were not significant. However, correlations between the receptive language scores and social skills approached significance ($r = .298$, $p = .069$).

Regression Analysis of CELF-R Expressive Language Scores and the SSRS Scores

The CELF-R expressive language scores were found to be a significant predictor of the SSRS scores ($p = .026$). These results suggest that lower expressive language scores on the CELF-R predict lower scores on the SSRS.

In summary, the results of the preliminary analyses showed that the level of inattention and externalizing behavior was significantly higher in the HRG than the LRG. When the HRG and the LRG were compared on demographic variables and measures of family functioning, and parenting practices the results showed lower levels of family income, lower levels of maternal education, less parental involvement, less parental monitoring and a higher use of corporal punishment in the HRG. The social skills as rated by the teacher were significantly lower in the HRG, with a very large mean difference of 46 points.

The results of the primary analyses showed that the levels of receptive and expressive language were significantly lower in the HRG than the LRG. When the group means were compared to the normative means, 78.94% of the HRG presented with a language delay, whereas only 36.84% of the LRG presented with a language delay. The type of language delays were both receptive and expressive, however further analyses revealed that the expressive skills were significantly lower than the receptive skills between and within the HRG and the LRG. Correlational analyses to determine relationships between language skills and the type of behavior problems (inattention and externalizing) indicated moderate significant correlations between receptive and expressive scores and the BASC teacher rating attention score. Although significant correlations between externalizing behavior and receptive and expressive language scores were not evident, inspection of the individual data revealed a possible relationship.

Finally the secondary analyses revealed significant negative correlations between expressive language scores and maternal and paternal education and social skills. The results of a regression analysis found that expressive language scores on the CELF-R predict lower scores on the SSRS. A further discussion of the results and the educational implications for the findings from the three phases of data analyses are discussed in the following chapter.

CHAPTER V

DISCUSSION

The primary purpose of this study was to determine whether children at risk for DBD had co-existing language delays. Corresponding to this purpose, a series of primary analyses were conducted to determine (a) whether significant differences were evident between the HRG and the LRG on measures of receptive and expressive language, (b) whether differences were evident between the frequency and type of language delays in the HRG and the LRG, (c) whether significant differences were evident between the types of language skills (expressive and receptive) within and between the HRG and the LRG, and (d) whether significant correlations were evident between receptive and/or expressive language skills and the type of behavior problem.

Prior to the primary analyses, a series of preliminary analyses were undertaken to confirm the risk status of the HRG and the LRG. As well, the preliminary analysis compared the HRG and the LRG on the well-established demographic, family-functioning, and social-skill risk factors, to determine whether these variables were also significant with children at risk for DBD.

Finally, the secondary analysis explored the relationship of expressive and receptive language with the demographic, family-functioning, and social-skill variables, respectively. As well, a regression analysis was conducted to determine whether there was a predictive relationship between language functioning and social skills. The results of these analyses are discussed in this chapter. Following this discussion, the implications of the results, limitations, and directions for future research are addressed.

A discussion of the main findings emerging in the preliminary analysis is presented first.

Preliminary Analysis

Confirmation of the Risk Status

Consistent with the screening process recommended in the literature (Walker et al., 1995) the current study used a systematic screening scale (SRSS) to identify students at high and low risk, respectively, for DBD. A standardized teacher and parent rating of behavior (BASC: attention and externalizing) was used to confirm the risk status of the participants and to obtain a broad and more accurate perspective of the student's at-risk behavior. The risk status of the HRG and the LRG was confirmed by the following results: (a) The means of the HRG on both the parent and the teacher rating of BASC attention and externalizing were significantly higher than the LRG means (Table 1); (b) a comparison of the group means to the normative mean indicated that the HRG BASC teacher attention scores were in the clinically significant range, the teacher externalizing scores were in the at-risk range, and the parent rating attention scores were in the at-risk range; conversely all LRG teacher and parent attention and externalizing ratings were in the average range; and (c) correlations between all the BASC teacher and parent ratings of attention and externalizing with the SRSS scores were significant (Table 2).

The higher scores of the HRG on the BASC teacher rating of behavior were expected because the same teachers rated both the SRSS and the BASC. The higher scores on the parent ratings of the BASC provided evidence for occurrence of the problem behavior across settings and informants. Higher ratings, and conversely lower ratings, of behavior from multi-informants increase the validity of the information and lead to a more accurate diagnosis (Witt, Heffer, & Pfeiffer, 1990).

The high level of inattention found in the HRG on both BASC teacher and parent rating is consistent with previous literature reporting high rates of co-morbid ADHD in children with DBD (Frick, 1998; Moffitt, 1993). The moderate to high correlations between the teacher and parent ratings of externalizing behaviors and attention (.395 to

.596) are consistent with the correlations reported in the test manual (.26 to .62; Reynolds & Kamphaus, 1992). Correlations reported between teachers' and parents' rating of behavior are often low (Frick, 1998; Witt et al., 1990) due to different setting demands and informant biases associated with the use of rating scales. The high correlation between the teacher and parent rating of attention in this study, especially in light of the probability that the demands for attention would be much higher in the school setting, certainly confirms the pervasiveness of the attention problem in the HRG.

It is worth noting, however, that the HRG teacher ratings of attention and externalizing behavior were higher than the parent ratings of these problems. This may reflect the true "situational variability" in the child's behavior (Frick, 1998). For example, the demands and expectations with respect to attention and concentration, academic skills, motivation, compliance with requests, and social behavior are likely greater in the school setting. For some children this may result in increased frustration, higher levels of inattention and overactivity, and acting-out behavior than occurs in the home setting.

Finally, these results validate the methodology of this study by clearly confirming differentiation of the groups according to high-risk and low-risk status.

Comparison of the HRG and the LRG on Demographic Variables

Both the HRG and the LRG are from schools comparable in high needs rating, based on the school district's criteria of low family income and high student mobility. However, the HRG's mean family income level and mean level of maternal education are significantly lower than in the LRG (Table 3). Although the mean income of the HRG (between $11,000 and $20,000) is significantly lower than that of the LRG (between $21,000 and $30,000), both groups have mean income levels considered by Statistics Canada as below the low-income cut-off level. The low-income cut-off level for a family of three living in a large urban area, based on Statistics Canada data as of February 1998, is considered to be $27,315; and for a family of four, it is $33,063. Families living below

the low-income cut-off level are considered to be living in "straitened circumstances" by Statistics Canada. This suggests that many of the families in both groups were experiencing impoverished economic conditions.

The significant differences in family income level between the HRG and the LRG are consistent with previous research on the association between low family income and the development of DBD (Frick, 1998; McCain & Mustard, 1999; Patterson et al., 2000; Steinhauer, 1997). However, as noted in the literature review, the mediating factors that link low income level and DBD are complex. In the current study, two of the mediating factors reported in the literature, including low maternal education and negative parenting practices (i.e., poor monitoring, and harsh discipline), were significantly lower in the HRG than in the LRG.

There is no significant difference between the groups on the variable of family structure. However, the number of one-parent families in the total sample (34%) was higher than reported statistics of Alberta families. Data from a report on the status of Edmonton's children (Success by 6®, 1999) reported that in Alberta one in eight children under the age of 12 years lives with a single parent. This data further indicated that single parent households headed by a single mother were more likely to be living in poverty. Thus, the higher number of one- parent families in the current study may be associated with the lower family income levels in the HRG and the LRG.

Comparison of the HRG and the LRG on Measures of Family Functioning

Family dysfunction is one of the strongest risk factors related to DBD (Frick, 1998). Family functioning was measured in the preliminary analyses of the current study to determine whether problems in family functioning were also associated with children at risk for DBD. The literature provides robust evidence that family stressors related to DBD are mediated through parenting style and parenting practices (Coie, 1996; Dishion & Patterson, 1997; McCain & Mustard, 1999; Moffitt, 1993; Steinhauer, 1997). The current study used two measures to assess family functioning, a measure of general

family functioning (McMaster Family Assessment Device: FAD) and a measure specifically designed to assess the parenting practices of children diagnosed with a DBD (Alabama Parenting Questionnaire, parent global form: APQ).

The means of the HRG and the LRG did not differ significantly on the FAD general family functioning scale. Both group mean scores were considered within the range of healthy family functioning. However, significant differences were found on three of the five subscales of the APQ, including involvement, poor monitoring, and corporal punishment (Table 4). These differences reflect less parental involvement and monitoring, and more use of corporal punishment in the HRG.

The results on the FAD in the current study are contrary to what was expected given the strong association between family dysfunction and DBD reported in the literature (Coie, 1996; Dishion & Patterson, 1997; McCain & Mustard, 1999; Moffitt, 1993; Patterson et al., 1989; Shaw & Winslow, 1997; Steinhauer, 1997). One plausible explanation for this result is that the general family functioning scale, although designed to measure the overall health of the family, is not sufficiently sensitive to what each of the six subtests measure (problem solving, communication, roles, affective responsiveness, affective involvement, and behavior control), due to a low number items on the subscale. Although this scale was developed from a subset of highly intercorrelated items extracted from the other six subscales, it comprises of only 12 items (one from problem solving, four from communication, two from roles, one from affective responses, three from affective involvement, and one from behavior control). Further analysis of the results from each of the six subscales may have provided a more accurate measure of family functioning. A second plausible explanation is that the children in the current study are considered at risk, and therefore the problems in family functioning are not as severe as the problems associated with a group of children diagnosed with a DBD. As well, it is important to note that previous research using the FAD (Epstein et al., 1983) was conducted with families of children presenting with internalizing disorders

(depression and anxiety). There were no studies conducted with families of children presenting with DBD. Therefore it may also be possible that the FAD may not directly measure those parenting constructs closely associated with DBD.

The results of the current study from the APQ, indicating less parental involvement, less parental monitoring, and a higher use of corporal punishment in the HRG, are consistent with the research on the association between DBD and family functioning (Dishion & Patterson, 1997; Frick, 1998; Loeber & Stouthamer-Loeber, 1986; Shelton et al., 1996). The significantly higher scores of the HRG on the negative parenting subscales of poor monitoring and corporal punishment are consistent in part with the results of Shelton et al. (1996). Unlike Shelton et al., the current study did not show a significant difference on the negative parenting subscale of inconsistent discipline. Again, this may be due in part to the differences in the participants, because Shelton et al. used a group of children with a diagnosed DBD, whereas the children in the current study were considered at risk. As well, Frick et al. (in press) noted an association between age trends and negative parenting practices and found that the subscale of inconsistent discipline was highly predictive in the adolescent group (13-17 years) and only moderately predictive in the younger age group (6-9 years).

In summary, the results suggest that negative parenting practices of less parental involvement, less parental monitoring, and higher use of corporal punishment associated with families of children with DBD, as reported in the literature, are also evident in families of children at risk for DBD.

Comparison of the HRG and the LRG on the Social Skills Rating System (SSRS)

The social skills of the children in the current study were measured to confirm, as reported in the literature review, that children at risk for DBD consistently demonstrate difficulties in their social relations with other children and adults in the school setting (Tremblay et al., 1996). The social skills as rated by the teacher were significantly lower in the LRG, with a very large mean difference between groups of 46 points (Table 5).

Very high correlations between social skills scores and the teacher ratings of externalizing and attention on the BASC, and moderate correlations between the parent rating of these behaviors confirms that there are relationships between risk for DBD and social-skill deficits.

These results are consistent with the literature (Bierman et al., 1996; Frick, 1998; Steinhauer, 1997; Tremblay et al., 1996; Walker et al., 1995). The magnitude of this relationship strongly validates the need for prevention efforts to focus on social-skill programming in the school setting (Tremblay et al., 1996).

In summary, the preliminary results indicated that the significant differences between the HRG and the LRG on the variables of behavior functioning (attention and externalizing), family income level, maternal education, parenting practices (involvement, monitoring, corporal punishment), and social skills in children at risk for DBD were generally consistent with the risk factor literature on children diagnosed with a DBD. The nonsignificant differences on the general family functioning scale are inconsistent with previous research. However, when the family functioning variables most closely associated with DBD (parenting practices) were measured, significant differences were evident, suggesting a trend towards less parental involvement and monitoring and more corporal punishment in the HRG. That the correlates of DBD are also present in children at risk for DBD highlights the importance of prevention in these areas.

Primary Analysis

The primary purpose of the current study was to determine whether children at risk for DBD had co-existing language delays. Although the literature reported a high level of language delays in children diagnosed with a DBD, no studies to date have been conducted on children at risk for DBD. In the studies of children with a previously diagnosed DBD, the pattern and type of language delay included a range of receptive,

expressive, and pragmatic language deficits; a high percentage of language delays were previously unsuspected; and a high level of co-morbid inattention was evident. Accordingly, the current study extended the primary analyses to address the frequency and type of language delays in the HRG and the LRG, the differences in the types of language skills (expressive and receptive) within and between the HRG and the LRG, and finally, to address the relationships between receptive and/or expressive language skills and the type of behavior problem.

Comparison of the HRG and the LRG on Receptive and Expressive Language Scores

In the current study, the HRG mean expressive and receptive language scores were significantly lower than the LRG mean expressive and receptive language scores (Table 6). When the group means were compared to the normative mean, 78.94% of the HRG presented with a language delay, compared to 36.84% of the LRG. These findings are consistent with the previous body of research on the relationship between language disorders and behavior disorders (Cohen, 1996; Stevenson, 1996). More specifically, these findings are consistent with those studies conducted in school settings in which 71% to 83% of children identified with mild to severe behavior disorders presented with co-existing language delays (Camarata et al., 1988; Griffith et al., 1997; Miniutti, 1991). These results clearly indicate that the language problems of children presenting with DBD are also present in children at risk for DBD. It is important to note that the percentage of children with language delays in the LRG (36.84%) is much higher than one would expect given the prevalence of 3% to 5% in the normal population (Cohen, 1996). This result, however, is consistent with the higher prevalence of language problems (30%) in children from families in a lower income bracket (McCain & Mustard, 1999). The confirmed relationship between lower family income and language problems is an important finding and will be addressed further in the discussion of the secondary analyses.

Most delays in the HRG were previously undetected by teachers and/or parents. This finding is consistent with previous research (Camarata et al., 1988; Cohen et al., 1993; Giddan et al., 1996; Prizant et al., 1990) and underscores the need for the systematic screening of language skills for children at risk for DBD. As posited in previous research, the externalizing symptoms of children with DBD may be more obvious and therefore mask underlying language problems (Cohen, 1996). It is possible that this may also occur with children at risk for DBD.

A Comparison of the Type of Language Delay Within and Between the HRG and the LRG

The HRG and the LRG presented with both expressive and receptive language delays. This finding is consistent with those of previous studies (Beitchman et al., 1986; Cantwell & Baker, 1991; Love & Thompson, 1988; Miniutti, 1991; Silva et al., 1987; Warr-Leeper et al., 1994). However, further analysis indicated that the mean expressive language scores were significantly lower than the mean receptive language scores between and within the groups. Interestingly, many of the participants in the HRG and the LRG with expressive language delays consistently scored lower on a CELF-R expressive subtest that measured the ability to formulate syntactically complex sentences. This finding replicated the findings of Miniutti (1991) and is consistent with those of studies that found a strong association between expressive language deficits and behavior problems (Beitchman et al., 1996; Camarata et al., 1988; Griffith et al., 1997; Stevenson et al., 1985).

Correlations of the Receptive and Expressive Language Scores with the BASC Parent and Teacher Ratings of Attention and Externalizing Behavior

A significant moderate negative correlation was evident between receptive and expressive language scores and the BASC teacher ratings of attention . Although the correlations between expressive and receptive language and the teacher rating of externalizing behavior were not significant, further inspection of the individual data of the HRG on the BASC teacher rating of externalizing behavior suggested evidence of a clinical relationship. Thirteen of the 15 students presenting with a language delay had scores in the at-risk to clinically significant range when compared to the normative mean. It is possible that low variability in the data and a small sample size may have lowered the correlations (Kenny, 1987).

These findings are consistent with those of several studies reporting that ADHD is the most common occurring psychiatric disorder in children with co-existing behavior and language disorders (Beitchman et al., 1986; Cantwell & Baker, 1991; Love & Thompson, 1988) and previous research reporting an association between ADHD and language deficits (Cantwell & Baker, 1991; Cohen, 1996; Moffitt, 1993). From a transactional perspective, Moffitt has provided strong evidence that neuropsychological deficits, including language deficits and inattention in younger children, interact over time with family and contextual risk factors and lead to aggressive antisocial behavior and its subsequent persistence. From this transactional perspective it is possible that the at-risk children in the current study, especially given the preliminary results that demonstrated relationships between the HRG and negative parenting practices and demographic variables, may develop increased externalizing behaviors over time. Studies of older school-aged children with a diagnosis of DBD reported a strong relationship between externalizing behavior and language delays (Camarata et al., 1988; Griffith et al., 1997; Warr-Leeper et al., 1994). Warr-Leeper et al. stated that "it may be that many children with conduct disorders have "learned" the behaviors associated with the

disorders because of the language deficits which have not allowed them to be effective in their communicating with others" (p. 167).

It is also important to note that previous studies reporting a relationship between language delays and externalizing behaviors have measured pragmatic language skills in addition to the receptive and expressive language skills (Cohen et al., 1993; Warr-Leeper et al., 1994). In the current study, the associations between language delays and externalizing behavior may be limited, because the pragmatic skills of the children were not measured.

Although correlations were not significant between receptive and expressive scores and the parent rating of attention and externalizing behavior, inspection of the individual data revealed evidence of some clinical relationships. For example, the parent rating of attention of the HRG revealed that 6 of the 15 students with language delays had attention scores in the at-risk to clinically significant range, and 7 of the 15 students had externalizing scores in the at-risk range to clinically significant range.

In summary, the results of the current study showed that a significant proportion of kindergarten and Grade 1 students at risk for DBD had co-existing language delays. Consistent with previous research, many of the participants had both expressive and receptive language delays, and most were previously undetected by teachers and/or parents. As well, expressive language skills were significantly lower than receptive language skills within and between the HRG and the LRG. Finally, negative significant correlations were evident between the teacher rating of attention and expressive and receptive language delays. Inspection of the individual data of the HRG revealed clinically significant relationships between the teacher ratings of externalizing behaviors and language delays. These results, when viewed from a transactional perspective, suggest that language delays and inattention may lead to increased externalizing problems in children at risk. This underscores the need for prevention efforts to include a focus on language functioning and attention skills in children at risk.

Secondary Analysis

The research on the relationship between DBD and language disorders suggested that related variables may partially or fully contribute to the onset of both disorders. The preliminary and primary analyses reported that lower family income, lower maternal education, negative parenting practices (involvement, monitoring, corporal punishment), social skills, and receptive and expressive language were all variables associated with the HRG. Accordingly, the purpose of the secondary analyses was to further explore the relationships between receptive and/or expressive language skills and the demographic variables, general family functioning and parenting practices, and social skills. As well, the results of a regression analysis between the CELF-R language scores and the SSRS scores are discussed.

Correlational Analysis

A total of 144 correlations were computed; however, for the purpose of this research study, only those including receptive and expressive language skills were reported. Moderate significant correlations were found between expressive language scores and maternal education, paternal education, and social skills. It is not surprising that very few significant correlations between language skills and the demographic and family functioning variables were obtained when the complexity of the relationship between behavior and language functioning is viewed from a transactional perspective. Accordingly, many of the risk factors may be mediated within a complex chain of development and surface through indirect relationships.

A discussion of the significant correlations between expressive language scores and maternal and paternal education in the current study may exemplify this complexity. For example, research shows that the level of parent education has a direct influence on the language stimulation provided to the child and the quality of parent and child interaction (Hoff-Ginsberg & Tardiff, 1995; Kaiser & Hester, 1997). However, maternal

education is also considered to mediate the association between low family income and compromised language development, as well as the relationship between low family income and negative parenting practices. In turn, negative parenting practices are associated with compromised language development. Addressing this complex chain of risk factors is beyond the scope of this research study; however, it underscores the need for further risk-factor research to consider the language functioning of the child in addition to the well-established contextual and family functioning variables.

Furthermore, the comparative design used in this study to determine whether children at risk for DBD had co-existing language delays provided support for plausible relationships between language delays and the variables of low family income, high levels of inattention, and negative parenting practices. The results are consistent with the extensive research on the relationship between language disorders and behavior disorders (Cohen, 1996; Stevenson, 1996). Additional support for the relationship between low family income and language delays was evident in the current study, because both the LRG and the HRG had mean language scores below the normative mean, and 36% of the LRG also presented with language delays.

The significant correlation between expressive language skills and social skills was expected given the various relationships between language delays and social-skill deficits reported in the literature (Bietchman et al., 1996; Gallagher, 1996; Vallance et al., 1998). From the perspective of pragmatic language skills, children who have difficulty clearly formulating and expressing their ideas may encounter social difficulties with resolving conflicts, requesting help, initiating relationships, and asking for clarification.

The literature also supported the relationship between receptive language skills and social skills (Beitchman et al., 1996; McTear & Conti-Ramsden, 1992). In the current study, the correlations between receptive language skills and social skills were weak but they reflected a trend ($r = .298$, $p = .069$). A larger sample size might result in significant correlations.

Regression Analysis of CELF-R Expressive Language Scores and the SSRS Scores

The expressive language scores were found to be a significant predictor of the SSRS scores. Consistent with the literature, this suggests that children with social-skill deficits may have underlying expressive language deficits. This finding is critical in light of the robust correlation between social-skill deficits and risk for DBD in the current study, and as reported in the literature (Bierman et al., 1996; Walker et al., 1995). As indicated earlier, language is a social phenomenon, and therefore it is not surprising that children with social-skill deficits have underlying language problems. This is supported by the results of the preschool communication intervention program in Toronto, Ontario, as reviewed by Gallagher (1996), suggesting a relationship between improved performance in expressive and receptive language skills and increased social skill performance. The implications of this finding will be addressed further in the section on educational implications.

In conclusion, the primary findings of this study provide evidence that a significant proportion of children attending kindergarten and Grade 1 in urban public schools rated as high needs were identified at risk for DBD and presented with co-occurring language delays. The preliminary analyses confirmed that low family income, low maternal education, negative parenting practices, and weak social skills associated with children with a diagnosed DBD, as reported in the literature, are also associated with children at risk for DBD. The secondary analyses reported a relationship between expressive language skills and maternal and paternal education and social skills. As well, expressive language skills were found to be a significant predictor of social skills. This is critical given the high correlations between social skill deficits and risk for DBD. It highlights the need for educators to consider the language functioning of children with social-skill deficits. The results obtained from the three phases of data analyses, when viewed in a transactional model of DBD, provide strong evidence for the need for educators to consider the language functioning in addition to the well-established risk

factors of social skills, co-morbid inattention, parenting practices, and related demographic factors, in children at risk for DBD.

Limitations

The nonexperimental causal-comparative design (Borg & Gall, 1989) used in this study allows for the exploration of relationships between variables at the time of the study. However, this design and subsequent analysis do not allow for the ability to make causal inferences. Conclusions based on the results of this study must be examined with this caveat in mind.

The sample for this study was small and therefore limited the effect size. As well, the sample was drawn from high-needs schools, and therefore the results are not considered representative and subsequently generalizable to the general school population. Because this sample was derived from students considered at high risk or at low risk for behavior disorders, this study excluded the group of children at moderate risk. This delimitation must be considered when generalizing the results to students in kindergarten and Grade 1 classes in high-needs schools.

The exclusion criteria specified that participants were not to present with a known or previously diagnosed mental retardation (I.Q. < 70). Accordingly, the school records were accessed to review previous cognitive assessments. However, as most of the participants in the current study had not previously received a cognitive assessment and the current study did not include such a measure, the level of cognitive functioning for most participants was unknown. This is a delimitation as lower cognitive functioning is associated with language disorders and therefore may be a factor in the relationship between language delays and risk for DBD in the current study.

As well, limitations are evident with respect to the measures employed in this research study. First, the measures of behavior (BASC parent and teacher), social skills (SSRS: teacher), general family functioning (FAD), and parenting (APQ: parent global)

were all rating scales. Witt et al. (1990) identified several limitations with respect to the use of rating scales. Rating scales are subjective and are limited to the informants' understanding of the items. In this researcher's experience, some of the family participants reported that various negatively worded items were confusing to understand. Although the researcher was available to answer any questions when the family participants were completing the forms, this factor may have had an influence on the results. As well, three types of bias can influence the informants' responses. First, the informant may believe the child to be good, and therefore he/she will rate all aspects of the child's behavior favorably. Second, informants can be too lenient or, conversely, too severe when rating the child's behavior. Third, the informant may be unwilling to assign extreme ratings.

Another measure limitation is with respect to use of the APQ. This measure of parenting practices is relatively new, and its reliability, validity, and use in the literature have not been well established. As well, it has not been standardized, and clinical cut-off points for negative parenting practices have not been established. Therefore, although statistical significance was obtained using this measure, clinical significance was not.

The assessment of language skills included a measure of receptive and expressive language skills but did not include a measure of pragmatic language skills. Such a measure may have allowed for stronger relationships between language skills and social skills.

Implications and Direction for Future Educational Practices and Research

Educational Implications

The results of the current study support the need for systematic language screening for children at risk for DBD in the school setting. Language screening can lead to further comprehensive assessment of a child's language abilities in the school and home environment and the subsequent development of prevention programs. It is evident

through the literature review and the results of the current study that the reasons for the relationship between language and behavior are quite complex and that a number of child- and parent-related factors mediate this relationship. Furthermore, it is likely that the combination of factors may be different for each child and his/her respective family. It is therefore critical that speech and language pathologists, teachers, and parents all work together to better understand and address the language needs of children at risk across settings, including the home, school, and community.

A significant proportion of children in the LRG presented with unsuspected language delays. This was consistent with recent research (McCain & Mustard, 1999) that reported a higher proportion of language problems in children of low-income families. Again, a multitude of factors contributes to the association between low income and language delays. However, the literature suggested that children with language problems in the kindergarten years are at risk for learning, literacy, social, and behavior problems in later school years (Cantwell & Baker, 1991). Therefore, it seems important that all kindergarten children attending high-needs schools should receive systematic language screening to ensure a focus on prevention.

The research on the relationship between language impairment and behavior disorders has supported the need for speech and language pathologists, teachers, parents, and other involved professionals to collaborate towards a better understanding of the relationship of behavior and language and the subsequent implications for programming in the home and school setting (Prizant et al., 1990). More specifically, Miniutti (1991) suggested the need for speech and language pathologists to provide and design classroom-based language programs that emphasize the development of oral skills and traverse curriculum and social opportunities. This encourages educators to move beyond the management of behavior and focus on the communicative aspects of behavior problems. The support of a speech and language pathologist in the development and implementation of social skills is especially important in light of previous research and

the current findings that support the link between expressive language deficits and social-skill deficits. This could facilitate an emphasis on pragmatic language skills in addition to social-skill development.

A dearth of research is available on language interventions of school-aged children at risk for DBD and/or children identified with coexisting behavior disorders and language disorders. However, emerging interventions in the preschool settings (Gallagher, 1996; Hayden & Pukonen, 1996; Kaiser & Hester, 1997) may serve as future models for teachers in the elementary grades. Hayden and Pukonen reviewed the Language Acquisition Preschool Program (LAP) from the University of Kansas, that provides a model for language stimulation and encourages parent participation within an integrated setting. Educators, speech and language pathologists and parent coordinators work together to ensure a model of integrated service delivery. Kaiser and Hester further suggested the need for planned transitions of programming from preschool to kindergarten.

Although the current results did not show a direct association between negative parenting practices and language delays, indirect associations were evident in the comparisons between the HRG and the LRG. Kaiser and Hester (1997) suggested that parenting programs for families of children at risk for DBD should include a focus on teaching communication skills in addition to the social and behavior-management skills.

The current results show a high level of co-morbid inattention in the HRG as rated by both teachers and parents. As indicated in the research, a co-morbid ADHD leads to more severe behavioral outcomes and increased stability of DBD (Frick, 1998; Moffitt, 1993). This result confirms the need for educators to screen for attentional features in addition to externalizing behavior in children at risk for DBD. Furthermore, in light of the relationships between ADHD and language deficits in the research and emerging in the current study, the presence of attentional difficulties may signal the possibility of language deficits.

Finally, this study confirmed the need for educators to systematically screen children at risk for DBD in kindergarten. The Student Risk Screening Scale was an effective and efficient screening tool, and the subsequent use of a standardized parent and teacher rating was an effective method to determine the clinical significance of the behaviors as well as to gain a multi-informant perspective. Given the stability of DBD as reported in the literature, this level of screening is critical to ensure a focus on prevention.

Research Implications

More research in the school setting needs to be done with children at risk. The majority of studies with school-age children have been carried out on older-aged students with a confirmed diagnosis of DBD. If prevention programs are to be developed in the school setting, then the language skills of children at risk for DBD when they first enter the school system must be identified. A promising example is evident in the National Longitudinal Study for Children and Youth, with the use of a "readiness to learn" screening measure. This measure, for research purposes only, includes a focus on language skills in addition to the screening of the more common academic, social, and behavioral risk factors (McCain & Mustard, 1999, p. 99).

This research study clearly points to the need for further research to examine the complexity of the relationships between behavior, language, social skills, and family functioning. Recent research has emerged on the relationship between language, social cognitive processing, and DBD (Cohen, Menna, et al., 1998) and language, achievement, cognitive processing, and DBD (Cohen, Barwick, Horodezky, Vallance, & Im, 1998). However, with respect to family-related variables, limited research has been available on the role that child language problems may play with respect to the relationship between DBD and negative parenting practices. If parenting programs for children at risk for DBD are to include a focus on communication skills, then further research in this area is necessary.

There is emerging research on the effectiveness of integrated preschool models of language intervention (Gallagher, 1996; Hayden, & Pukonen, 1996). Haydon and Pukonen reported preliminary data from the LAP program that suggested improved language and social communication in children with language impairments. Conversely, without intervention about "40% of preschool or kindergarten children identified with speech/ language impairments do not stay with their kindergarten cohort in subsequent academic placement"(p.442). Research on classroom-based models of language intervention is strongly needed in the school setting.

In conclusion, the results of the present study suggest that children at risk for DBD may also present with co-existing language delays. The relationship between language disorders and behavior disorders is well established in the literature (Cohen, 1996; Stevenson, 1996). Further longitudinal research exploring language prevention programs in the school setting for children at risk for DBD is necessary.

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APPENDIX A

PROTOCOLS AND CONSENT FORM

Information Letter, Principals

Dear Principal,

There is strong evidence to suggest that language delays and problems in family functioning may be related to a child's behavior problems in school. These risk factors when identified early in a child's school career can lead to the development of effective support services and programs that may prevent the child from developing a behavior disorder.

As a graduate student I am interested in learning more about the risk factors of language delays and problems of family functioning and their impact on a child's behavior. Specifically, my research proposes to measure the variables of receptive and expressive language: social skills; family functioning factors such as problems solving, communication, and relationships in the home environment; and parenting practices such as involvement with the child, discipline practices, and supervision of the child. These variables will be measured and compared between two groups of kindergarten and Grade 1 students: a group identified as high risk for disruptive behavior disorders and one identified as low risk for disruptive behavior disorders. The intent of my research project is to determine whether these risk factors are associated with disruptive behavior problems so that recommendations for prevention and service delivery can be made.

Thus, we are asking for the kindergarten and Grade 1 teachers' participation and the participation of approximately five students for inclusion in the _____ (high-risk/low-risk group) and their respective families in this project. The teachers' participation will involve the following:

- An introductory meeting (approximately 30 minutes) to review and answer any questions regarding the project. The teachers' written consent to participate will be obtained prior to any further involvement in the project. The participation in the project is entirely up to the teacher/principal, and they are free to choose not to participate.

- Following written consent, the teacher will be asked to nominate up to five students in their classes who in their judgment may be considered as _____ (high risk for a behavior disorder/low risk for a behavior disorder). The teacher will be asked to consider the following behavioral indicators when making a judgment: aggressive behavior; negative attitude; low academic achievement; peer rejection; behavior problems; lying, sneaking, cheating; stealing. When considered students for inclusion in the high-risk group, the teacher will be asked to nominate only those students whose parents he/she has had previous communication with regarding the child's problem behaviors.

- Once the students have been identified, the teacher will be asked to contact the parents by phone, briefly describing the research, and to ask the parents if they would be willing to participate in an individual information meeting about the project. Each phone call will take approximately five minutes, and the teacher may have up to five phone calls to make. Those parents who are interested in attending an information meeting will be sent a letter describing the rationale for the project; time commitments of the teacher, student, and family; measures to protect the family's legal and ethical rights; and a general description of procedures and activities. The parents will be asked to sign a written consent to allow the researcher to make contact and set up a meeting time.

- Upon written consent from the parents, the teacher will be asked initially to complete a student-risk screening scale, a simple screening procedure which places the student into one of three risk categories: severe risk for disruptive behavior disorders, moderate risk for disruptive behavior disorders, and low risk for disruptive behavior disorders. This screening procedure will confirm the student's inclusion in the _____ (high-risk category/low-risk category). This procedure takes approximately five minutes to complete. The teacher will also be asked to complete two rating forms per child participant related to the child's behavior and social skills. Approximately 30 minutes per child will be necessary to complete the forms.

Parent participation will involve the following:

- An introductory meeting (approximately 30 minutes) to review and answer any questions regarding the project. The parent will be free to refuse any further involvement at this time. Written consent to participate in the research study will be obtained at this time.

- The parent will be asked to complete the three rating forms related to the child's behavior at home, family functioning, and parenting practices. This will involve approximately 45 minutes of the parent's time. Following the completion of the rating forms, each family will receive a payment of $25.00 to compensate them for their time.

- Information regarding resources and support services will be available to interested parents.

Student participation will involve the following:

- Each participant will receive the following measures: (a) an individual hearing screening, and (b) an individual test of expressive and receptive language skills. Students will require approximately 60 minutes out of class time to participate. This testing will be conducted by a trained speech and language pathologist. Students will be excluded from the study if they do not pass the hearing screening. The parents will be contacted immediately and assistance provided to arrange for further audiological evaluation.

There are several benefits to the your participation in this research. Both the teacher and the parent will receive a written report documenting the student's level of expressive and receptive language skills, as well as a description of behavioral and social functioning as rated by the teacher. The researcher will offer interested parents and teachers a list of relevant support services and resources. Finally, this study focuses on prevention and, in doing so, may build on positive communication between the school and the home.

There do not appear to be any direct risks to your participation. The questions asked of the parents on the rating forms should not create emotional distress. However, assistance with accessing support and resources will occur if the parents indicate concerns in any areas.

To protect the legal and ethical rights of the school personnel, student, and parent, the following procedures will be incorporated:

1. Informed consent: The parents will provide informed consent before the student is identified as eligible for inclusion in the study. Therefore the full names of the students will not be released to the researcher until such consent is obtained.

2. Confidentiality: All teacher and parent rating forms will be coded numerically, and identifying information will not be placed on any of the forms. The results of the parent rating forms will not be released to school personnel unless specifically requested by the parent.

3. Option to stop: If at any time the school personnel or the parents are uncomfortable with the proceedings, they have the right to withdraw from the study.

Your participation and cooperation in this project would be greatly appreciated. Thank you for your time in reading this letter. We look forward to your participation.

Sincerely,

Diane Hinves
Graduate Student
University of Alberta
(426-0205)

Jack Goldberg PhD
Professor
University of Alberta
(492-3740)

Teacher Consent to Participate in the Research Study

I, _____, have participated in the initial meeting related to this project. I understand the nature and intent of this project and are willing to participate in the following activities:

- to contact the parents of up to five children eligible for inclusion in this study
- to conduct a Student Risk Screening Scale on the students eligible for inclusion in the study
- to complete two teacher rating forms per child participant

_____
Initials

I am aware of the following student participation and related activities:

- The student school cumulative records will be reviewed.
- The student will receive a hearing screening.
- The student will receive an individual assessment of expressive and receptive language skills.

_____
Initials

I am aware of the following parent participation:

- Interested parents will participate in an information meeting.
- The parents will complete a set of three rating forms related to family functioning, parenting practices, and their child's behavior.

_____
Initials

I understand that both the parents and I will receive a written copy of the results of the teacher behavior and social skill rating, and the child measure of receptive and expressive language skills. I understand that the information from the parent rating forms will not be available unless requested by the parent, in order to ensure parent confidentiality.

_____
Initials

Signature_____

Date_____

Signature_____

Date_____

Teacher Script for Parental Contact

A graduate student from the University of Alberta, who works at McDougall School, is conducting research and looking at children's behavior and how it might be affected by a child's language skills. As well, the researcher is looking at how family communication and relationships and parenting may be related to child behavior.

This project involves testing the language skills of your child and having the teacher (me) fill out forms on your child's behavior and social skills and for you as the parents to fill out forms on the child's behavior, your family communication, and parenting practices. It will take about 45 minutes for you to fill out the forms, and you will be paid $25.00 for your time. All the information that you fill out will be confidential, and your name will be replaced with a code to protect your confidentiality. All the information from the forms that the teacher fills out and the language testing will be provided to you in the form of a written report.

Would you be willing to meet with the researcher to find out more information? If you consent, you can fill out the forms at the meeting. If you decide not to, you can leave, and your child's program will NOT be affected in any way.

If you are willing to participate, please meet at the school on (day and time):

- If confirmed, send home the parent information letter with the time confirmed at the top of the letter.
- Call Diane (426-0205) to confirm time (leave a message with the secretary, Dianne O'Gormann).

Teacher Script for Parental Contact (Low Risk)

A graduate student from the University of Alberta, who works at McDougall School, is conducting research and looking at children's behavior and how it might be affected by a child's language skills. As well, the researcher is looking at how family communication and relationships and parenting may be related to child behavior. Your child has been selected because he/she DOES NOT display any behavior problems.

This project involves testing the language skills of your child and having the teacher (me) fill out forms on your child's behavior and social skills and for you as the parents to fill out forms on the child's behavior, your family communication, and parenting practices. It will take about 45 minutes for you to fill out the forms, and you will be paid $25.00 for your time. All the information that you fill out will be confidential, and your name will be replaced with a code to protect your confidentiality. All the information from the forms that the teacher fills out and the language testing will be provided to you in the form of a written report.

Would you be willing to meet with the researcher to find out more information? If you consent, you can fill out the forms at the meeting. If you decide not to, you can leave, and your child's program will NOT be affected in any way.

If you are willing to participate, please meet at the school on (day and time):

- If confirmed, send home the parent information letter with the time confirmed at the top of the letter.
- Call Diane (426-0205) to confirm time (leave a message with the secretary, Dianne O'Gormann), or email Diane Hinves at McDougall.

Parent Information Letter

Dear Parents,

I am a graduate student at the University of Alberta. I am conducting a research study to look at child behavior and how it might be affected by his/or her language skills (i.e., understanding, speaking, and getting along with others). As well, I am looking at how family communication and relationships, and parenting practices (i.e., discipline, supervision) may be related to child behavior.

I would like to talk to you about this research project to see whether you would be interested in participating. This meeting will take about 30 minutes, and I will give you information about your participation, your child's participation, and your child's teacher's participation. If you choose to participate you will be asked to sign a consent form. However, you are free not to participate, and this choice will in no way affect your child's school program.

If you consent to participate, this project will involve meetings with you, your child's teacher, and with your child. I will ask you to fill out some rating forms about your child's behavior, your family relationships, and your parenting practices. These forms will take about 45 minutes in total to fill out. The questions on the rating forms should not make you feel uncomfortable. If you would like information on any of the topics addressed, this will be provided. As well, to compensate you for your time, you will receive a payment of $25.00. The information on the rating forms will not be shared with your child's teacher and will remain confidential. A code will be used to replace your name on all the forms to ensure your confidentiality and privacy. Your participation in this project is entirely up to you, and you will be free to withdraw at any time you feel necessary.

I will request your permission for your child's teacher to participate in this study. Your child's teacher will be asked to complete two rating forms about your child's behavior and a rating form about your child's social skills in the school setting. This information will be shared with you in a written report.

I will request your permission for your child to participate in this study. First, I will request permission to look through your child's school file to determine whether your child has had any past language assessments or hearing screening. If not, I will need your permission to have your child's hearing screened by a trained audiologist. This screening will take about 15 minutes. If there are any concerns about your child's hearing, you will be called immediately. Also, I will request your permission for the speech and language pathologist to test your child's language skills, including his/her ability to communicate and to understand information. This test will be given to your child individually and outside of the classroom and will take about 45 minutes. The testing activities involve looking at pictures, and children often find the activities fun. However, the testing would be discontinued immediately should your child show any

signs of distress or refuse to participate. The results of the assessments will be given to both you and your child's teacher in a written report.

The results of this research will be used only in a research thesis, presentations, and written articles for other educators. Any information that identifies you or your child will be destroyed upon the completion of the research. You or your child will not be identifiable in any documents resulting from this research.

Your participation and cooperation in this project would be greatly appreciated. Thank you for your time in reading this letter. We look forward to your participation.

Sincerely,

Diane Hinves
Graduate Student
University of Alberta

Jack Goldberg PhD
Professor
University of Alberta

Parent Consent to Participate in the Research Study

I, _____, have participated in the meeting about this project. I understand the nature and intent of this project and are willing to participate in the following activities:

- to complete a set of three rating forms about family relationships, parenting practices, and my/our child's behavior

_____
Initials

I am aware of the following teacher participation:

- The teacher will complete one behavior form about my/our child's behavior.
- The teacher will complete a rating form about my/our child's ability to get along with others.

_____
Initials

I am aware of the following child participation and related activities:

- The researcher will look through my/our child's school records and may use information related to a hearing screening and/or language assessment.
- My/Our child will receive a hearing screening.
- My/Our child will receive an individual assessment of language skills outside of the classroom.

_____
Initials

I understand that both the teacher and I will receive a written copy of the results of the teacher behavior and social skill rating and the child assessment of language skills. I understand that the information from the forms I fill out will be treated confidentially and that the teacher will not be given this information. I understand that I can withdraw from participating in this study at any time.

_____
Initials

I understand that the results of this research will only be used in a research thesis, presentations, and written articles for other educators. I understand that any information that identifies my child will be destroyed upon the completion of the research. I understand that my child and I will not be identifiable in any documents resulting from this research.

_____
Signature of parent/legal guardian

Date_____

APPENDIX B

FAMILY DEMOGRAPHICS FORM

Family Demographics Form

The following questionnaire is designed to provide us with some basic information about your family.

Family Code: _____ Date:_____

Female respondent or male respondent (circle one)
Relationship to child _____

1. Family Structure (please check one)

   One-parent family _____
   Two-parent family _____

2. Primary occupation of mother/female caregiver?

_____

3. Primary occupation of father/male caregiver?

_____

4. Level of education of mother/female caregiver?

_____

5. Level of education of father/male caregiver?

_____

6. Gross family income in the range (check one)
   a. $0 - $10,000
   b. $11,000 - $20,000
   c. $21,000 - $30,0000
   d. above $31,000

7. Have you received any speech and language services from Capital Health?

_____

8. Was your child in an early intervention or preschool program?

_____

Names	Steal	Lie, cheat, sneak	Behavior problems	Low achieve-ment	Negative attitude	Aggres-sive behavior	Peer rejection	Total